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# **SEEING THE LIGHT: REPORT ON STAFFED LIGHTHOUSES IN NEWFOUNDLAND AND LABRADOR AND BRITISH COLUMBIA**

Report of the Standing Senate  
Committee on Fisheries and Oceans

The Honourable Fabian Manning, Chair  
The Honourable Elizabeth Hubley, Deputy Chair

October 2011  
(first published in December 2010)

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## **ORDER OF REFERENCE**

Extract from the Journals of the Senate, Sunday, June 26, 2011:

The Honourable Senator Manning moved, seconded by the Honourable Senator Smith (Saurel):

That the Standing Senate Committee on Fisheries and Oceans be authorized to examine and to report on issues relating to the federal government's current and evolving policy framework for managing Canada's fisheries and oceans;

That the papers and evidence received and taken and work accomplished by the committee on this subject since the beginning of the Third Session of the Fortieth Parliament be referred to the committee; and

That the committee report from time to time to the Senate but no later than September 30, 2012, and that the Committee retain all powers necessary to publicize its findings until December 31, 2012.

The question being put on the motion, it was adopted.

Gary W. O'Brien

*Clerk of the Senate*

**SEEING THE LIGHT:**

**REPORT ON STAFFED LIGHTHOUSES  
IN NEWFOUNDLAND AND LABRADOR  
AND BRITISH COLUMBIA**



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## **LIST OF RECOMMENDATIONS**

### **Recommendation 1:**

**The Committee recommends that the Canadian Coast Guard halt its current destaffing plan, and that destaffing, continued staffing, or restaffing be determined on a lightstation-by-lightstation basis through appropriate guidelines and thorough consultations. Until this is completed, current lightkeeper staff levels should be maintained in the Pacific Region and in the Newfoundland and Labrador Region.**

### **Recommendation 2:**

**The Committee recommends that a long-term policy for lightstations be developed that will obviate cyclical reviews and that ensures continuation of a suitable level of staffing.**

### **Recommendation 3:**

**The Committee recommends that the guidelines and consultations (as called for in Recommendation 1) take account of:**

- a) all the purposes served or potentially served by lightkeepers in a practical and cost-effective manner;**
- b) all the agencies and/or stakeholders involved with lightstations, including possible cost-sharing agreements; and**
- c) the views of lightkeepers, user groups, coastal communities and other interested parties, both in the local areas and elsewhere as appropriate.**

### **Recommendation 4:**

**The Committee recommends that a comprehensive cost-benefit analysis be undertaken on the full range of services provided by staffed lightstations prior to any further discussion or evaluation of Canada's lightstations.**

### **Recommendation 5:**

**The Committee recommends that a review be conducted to determine the most cost-effective means of maintaining and servicing staffed lightstations, including potential energy savings which can be made available through new approaches to generating power for the needs of personnel on such stations.**

## FOREWORD

Early this year I received a letter from the Minister of Fisheries and Oceans, requesting that the Standing Senate Committee on Fisheries and Oceans study the question of the staffing of lighthouses and make recommendations. Unusual though it is to receive such a request from a Minister, the Committee agreed. However, we set our own terms of reference, which included the future of not only lightkeepers but lighthouses, particularly bearing in mind the *Heritage Lighthouse Protection Act*. A forthcoming report will cover that matter; this one deals with staffing alone.

In 2009, the Canadian Coast Guard (CCG) advanced a plan to remove Canada's remaining lightkeepers in British Columbia and Newfoundland and Labrador. The CCG argues that removing keepers would make better use of taxpayer dollars, because automated lights could operate independently of them. The agency had earlier made several such attempts. Each time, public opposition averted full-scale closures.

To study the matter, we held hearings in Ottawa and made regional visits. A number of Committee members travelled first to Nova Scotia, where lighthouses were de-staffed in earlier years, to learn from that experience. We made similar fact-finding visits to Newfoundland and Labrador and British Columbia. Originally we had planned public hearings in those two provinces, with simultaneous interpretation and full transcription. The Senate Committee on Internal Economy, Budgets and Administration finally approved a small budget that permitted only fact-finding trips rather than formal recorded hearings.

This format did however enable a great many frank and productive discussions. Spending nearly a week in each province, we met with a wide variety of stakeholders, community groups, and interested individuals – more than 240 persons overall. We travelled by road and helicopter to as many lighthouses as we could, looking over the structures and talking to lightkeepers themselves.

Everywhere we went, coastal people told us that a human presence on remote coastlines reinforces sovereignty itself. Green Island in British Columbia lies in treacherous waters just south of the Alaskan marine border. There, Serge Paré, the principal lightkeeper, stands on guard for Canada year-round, performing maintenance, weather-reporting, and other duties. On another Green Island at the opposite end of Canada, in the passage between the island

of Newfoundland and France's St. Pierre and Miquelon, we met lightkeepers Berkley Pierce and Carl Crews; they and colleagues provide constant navigational aid and advice to passenger ferries and other craft. One boater told us of receiving life-saving shelter there mere days before our visit. Like their colleagues scattered along the coasts, the lightkeepers at those two border stations serve Canada in more ways than most people know.

Seaplane pilots use lightkeepers extensively for weather and safety reports, as do kayakers, pleasure boaters, ship navigators, and fishermen. People in Nova Scotia, where lights are automated, told us that the beacon light itself had worked better at staffed stations. On both coasts we heard that nothing could replace that tower by day, the light by night, or the welcome voice on the radio when all else fails.

We also heard about lightkeepers' assistance to environmental monitoring, climate studies, whale research, ecological preserves, and citizens at large – for example, hikers often receive help from lightkeepers.

Tourism benefits as well. In Crow Head, Newfoundland and Labrador, we heard from the local development committee that a knowledgeable keeper in an upgraded lightstation could help increase their tourist visits from 40,000 per year to 55,000.

We also heard that lightkeepers could do more than at present. In conjunction with previous attempts at destaffing, their duties have been cut back, even as the number of smaller craft on the water has grown.

The views we heard on both coasts were overwhelmingly in favour of keeping the keepers. And that is what we are unanimously recommending. While not all lightstations have equal merit, a great number deserve a dedicated staff. An evaluation of which lighthouses should retain their lightkeepers, which ones could be de-staffed, and even whether certain unstaffed lights merit re-staffing, should be immediately done on a case-by-case basis. Other recommendations you will find in the following pages.

Let me say on behalf of the Committee what a wonderful experience this study has been: climbing the oak-panelled circular stairs of a historic tower; landing in a helicopter on a concrete pad at a tiny island lashed by towering whitecaps; listening to the stories of lightkeepers who received us so hospitably. It was an experience we will never forget.

The Committee would like to thank all those who generously made time to participate in our discussions. We are particularly grateful to the lightkeepers and other

dedicated staff of the Canadian Coast Guard, including Susan Steele, Regional Director, Maritime Services, Pacific Region and Ray Browne, Regional Director, Maritime Services, Newfoundland and Labrador Region, for their expert knowledge and guidance. And we thank helicopter pilots Bob Bartlett on the Atlantic and Pat Casey on the Pacific for their courtesy and competence.

I want to thank Claude Emery of the Library of Parliament, a seasoned and eminently knowledgeable researcher and writer without whom we could not have issued this report. I also thank Danielle Labonté, our Clerk, who routed and marshalled us so ably and whose Blackberry was often on until 11 p.m. reordering and rescheduling because of weather. And to Ceri Au, our Communications Officer, who made sure our message got out and that we accommodated interested media, our thanks for a job well done.

Last but not least, I thank my colleagues who put not only their heads but their hearts into asking pertinent questions, assorting the various viewpoints, and searching for answers to difficult questions. This summary of what we heard also contains our combined reflections and recommendations. We hope it meets with approval.

Bill Rompkey, P.C., Former Chair

## THE MINISTER'S REQUEST

In 2009, the Canadian Coast Guard (CCG) – a special operating agency of the Department of Fisheries and Oceans (DFO) (see Appendix 1) – advanced a plan to gradually remove Canada's remaining lightkeepers at 50 lightstations in DFO's Newfoundland and Labrador Region and Pacific Region.<sup>1</sup>

Reaction to the plan was extremely negative. No formal review or consultation had taken place with user groups or stakeholders,<sup>2</sup> who responded by flooding DFO with letters voicing their staunch opposition, including the Union of B.C. Municipalities and the Federation of Canadian Municipalities, which voted unanimously in favour of a resolution calling “on the Prime Minister to cease all efforts to destaff lightstations and instead commit to maintaining light station staffing levels indefinitely, in order to ensure the safety of the working and travelling public and the vibrancy of the growing coastal community.”

On 30 September 2009, the Minister of Fisheries and Oceans, the Honourable Gail Shea, put the plan on hold pending a review by the Coast Guard of the “additional services” that lightkeepers provide – services in addition to their normal functions.<sup>3</sup> No staffed lightstations were to have their lightkeepers removed before the review was completed.

Six months later, in a letter to the Chair of the Committee of the Standing Senate Committee on Fisheries and Oceans dated 23 March 2010, Minister Shea requested that the Committee undertake the review announced in September 2009. Appearing before the Committee on 13 April 2010, the Minister requested that the Committee determine whether the “additional services” that lightkeepers provide are necessary and/or can be provided by other means without compromising public safety.

The Committee agreed to study the matter, but also broadened the scope of its study to include the implementation of the *Heritage Lighthouse Protection Act* (HLPAct), which

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<sup>1</sup> There are six DFO administrative regions: Pacific, Central and Arctic, Quebec, Maritimes, Gulf, and Newfoundland and Labrador. A “lighthouse” refers to a structure (a tower) that supports or encloses a light for navigational purposes. A “lightstation” refers to the lighthouse, its light, the property on which the lighthouse is situated, and any other buildings (e.g., dwellings, sheds, boathouses) or equipment (e.g., foghorns) on the property.

<sup>2</sup> Senior management met with union representatives to inform them of their decision on 14 August 2009. On 1 September 2009, the Coast Guard notified lightkeepers on both coasts that the agency would be proceeding with a destaffing process.

<sup>3</sup> DFO, “Review of Automated Lightstation Staffing,” Ministerial statement, 30 September 2009, <http://www.dfo-mpo.gc.ca/media/statement-declarations/2009/20090930-eng.htm>.

came into force on 29 May 2010. At that time, DFO declared, pursuant to the HLPAs, 487 active and 488 inactive fixed aids “surplus” to program requirements. These are structures that the Coast Guard wishes to eventually replace with easier-to-maintain metal towers. Not declared surplus were the 50 staffed lightstations, pending the outcome of this present review.<sup>4</sup>

In testimony, George Da Pont, then CCG Commissioner,<sup>5</sup> indicated to the Committee on 20 April 2010 that the coming into force of the HLPAs was a “secondary reason” why the Coast Guard believes that “destaffing can and should proceed.”<sup>6</sup>

Lighthouses evoke strong feelings, especially in coastal communities. Beyond their traditional role as navigation aids, they are monuments to Canada’s proud maritime heritage. Like railway stations, they played an important role in Canada’s history. Many are essential features of local community landscapes and identity, have significant architectural features, are sources of tourism revenue, and are used in marketing Canadian places as tourist destinations. A number of them are significant tourist attractions in and of themselves.

The Committee disagrees with the wholesale designation of active lighthouses as surplus, on two grounds: (a) it is not clear that lights on metal towers can, in all cases, equal the effectiveness of traditional lighthouses; and (b) the sheer number of lighthouses declared surplus undermines the intent and the workings of the HLPAs.

The Committee intends to report more fully on the implementation of the Act next year.

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<sup>4</sup> DFO, “*Heritage Lighthouse Protection Act* Implementation: Frequently Asked Questions,” May 2010, <http://www.dfo-mpo.gc.ca/media/infocus-alaune/2010/02/lighthouse-phare-faq-eng.htm>.

<sup>5</sup> Marc Grégoire was appointed CCG Commissioner in June 2010.

<sup>6</sup> George Da Pont, CCG Commissioner, *Proceedings of the Standing Senate Committee on Fisheries and Oceans* (hereafter, *Committee Proceedings*), 20 April 2010.

## LIGHTSTATION DESTAFFING

The first lighthouse in Canada was established at Louisbourg on Cape Breton Island, Nova Scotia, in 1734. Thereafter, lighthouses were commissioned and decommissioned as navigation aids and marine traffic evolved.

Because the safety of mariners and the public was always held to be of great importance, technological innovations were continuously applied to improve these fixed navigation aids. For instance, oil-burning lamps and parabolic reflectors were replaced in the early 19<sup>th</sup> century with Fresnel lenses made of glass prisms that focused the light into a beam that could be seen over much greater distances. Over time, electric lights replaced high-maintenance kerosene lamps.

The traditional tasks of lightkeepers – the very first “coast guard” – included the “keeping of the light” and turning on foghorns. From the very beginning, they were search and rescue (SAR) people who were always expected to come to the aid of the shipwrecked.

In 1970, the Coast Guard began the process of systematically automating lightstations and removing staff from them. Technological developments in lighthouse equipment had made it possible to operate the lights and to activate foghorns without immediate human attention. Radar, radio beacons, satellite-based global positioning systems (GPS) and advances in communications have since made navigation more reliable for those equipped with this technology.

During the 1990s, the CCG’s objective became to phase out all remaining staffed facilities. By the mid-1990s, all but one of the lightstations in the Central and Arctic Region, the Quebec Region and the Maritimes Region (Nova Scotia, New Brunswick and Prince Edward Island) were automated and had their staff removed. The one exception was Machias Seal Island in the Maritimes Region, where lightkeepers are retained to this day for sovereignty reasons.<sup>7</sup>

In Nova Scotia, where there have been no lightkeepers since 1993, the destaffing exercise was described to Committee members during fact-finding work in June 2010 as having been heavy-handed, with consultation being nothing more than a lobbying effort to have staff

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<sup>7</sup> Both Canada and the United States claim Machias Seal Island as their own. The island is located in the Gulf of Maine approximately 19 kilometres southwest of Southwest Head, New Brunswick (on Grand Manan Island).

removed. Fishermen and their representatives felt that some stations should have remained staffed, and also that at key locations some should be restaffed.

In British Columbia and in Newfoundland and Labrador, public pressure effectively stopped the removal of lightkeepers in 1998. In the face of widespread opposition from coastal communities, fisheries groups, recreational boaters, aviators, marine transport organizations, and others – supported by local MPs and senators<sup>8</sup> – the federal government reversed its course. At the time, there were concerns about the reliability of automated equipment and the loss of lightkeeper services. Opposition was widespread and overwhelming, and greatest in British Columbia, where groups normally at odds with one another were united in their opposition.<sup>9</sup>

In December 1998, Treasury Board approved \$47.6 million in operating funds and \$24.5 million in capital funds over five years to continue staffing lightstations in the two regions. A further \$12.9 million per year was approved for the years after 2002–2003.<sup>10</sup> The Coast Guard further evaluated the matter of destaffing stations during a Departmental Assessment review in 2001, a Departmental Assessment and Alignment review in 2002, and an Expenditure Review Process in 2004, which reaffirmed the previous government decision to maintain staffed lighthouses.<sup>11</sup>

For decades, senior CCG managers have questioned the value of staffed lighthouses. It is an issue that just does not seem to ever go away. On both coasts, participants in our discussions expressed deep frustration about this situation. Some people we spoke to in British Columbia said that it was the fourth time they had appeared before a committee to fight to keep people “on the lights.” The matter is important to the users of lighthouse services, to the Coast Guard, and to the lightkeepers themselves.

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<sup>8</sup> In November 1994, an Ad Hoc Committee on Lightstations, co-chaired by MP John Duncan and Senator Pat Carney, undertook hearings in four coastal communities in British Columbia (Richmond, Sidney, Campbell River and Nanaimo). The resulting report was instrumental in stopping the destaffing process. John Duncan, Member of Parliament, *Committee Proceedings*, 8 June 1010.

<sup>9</sup> John Duncan, Member of Parliament, *Committee Proceedings*, 8 June 2010.

<sup>10</sup> Auditor General of Canada, 2002 Report, *Contributing to Safe and Efficient Marine Navigation*, Chapter 2, [http://www.oag-bvg.gc.ca/internet/English/parl\\_oag\\_200212\\_02\\_e\\_12396.html](http://www.oag-bvg.gc.ca/internet/English/parl_oag_200212_02_e_12396.html).

<sup>11</sup> DFO, *Status Report of Auditor General's Recommendations of 2000 and 2002, As of March 31, 2009*, [http://www2.parl.gc.ca/Content/HOC/Committee/402/PACP/WebDoc/WD4020496/Action\\_Plans/12-Department%20of%20Fisheries%20and%20Ocean-e.htm](http://www2.parl.gc.ca/Content/HOC/Committee/402/PACP/WebDoc/WD4020496/Action_Plans/12-Department%20of%20Fisheries%20and%20Ocean-e.htm).

## THE 2009 COAST GUARD PLAN

The Coast Guard plan is a cost-saving measure. Fisheries and Oceans Minister Shea explained to the Committee that taxpayers may not be getting their money's worth in continuing to staff lightstations.<sup>12</sup> According to the Coast Guard, the plan is about making the best use of budgets and providing the best possible services to clients. The savings realized from resources spent on staffed stations would be reinvested in other Coast Guard services, such as Search and Rescue and navigation aids.<sup>13</sup>

The plan calls for the gradual removal, to the greatest extent possible, of lightkeepers from automated stations, through attrition. There are two basic principles: no indeterminate (permanent) public servant would be laid off, and lightstations would be left unstaffed only if fully automated.

The Committee notes that the major consideration guiding this process is employee welfare, not public safety. The assumption is that people "on the lights" are no longer needed.

In implementing the plan, lightkeeper positions vacated as a result of retirements or for other reasons would not be filled; lighthouse staff hired on temporarily (term and casual employees) would eventually be let go; and indeterminate employees would be reassigned to other stations, or could choose to pursue other employment within the CCG.

With respect to other employment within the organization, the Coast Guard indicated to the Committee that the time is right to complete the destaffing process, given that lightkeepers can be assured of employment elsewhere in the CCG. Like many other public sector departments and agencies, the Coast Guard has an aging workforce, and the agency is experiencing a critical recruitment period as an increasing number of employees are eligible to retire.

In Newfoundland and Labrador, the lightstation on Green Island (Fortune Bay) was slated for destaffing in 2009. Cape St. Mary's, Powles Head, and Red Bay were also identified in the human resource management plan as stations representing opportunities for destaffing. In the Pacific Region, Dryad Point and Entrance Island lightstations were identified

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<sup>12</sup> The Honourable Gail Shea, Minister of Fisheries and Oceans, *Committee Proceedings*, 13 April 2010.

<sup>13</sup> George Da Pont, *Committee Proceedings*, 13 and 20 April 2010.

for immediate closure, Cape Mudge and Trial Island as potential closures in 2009–2010, and Boat Bluff as a confirmed closure for 2010–2011.

## **STAFFED LIGHTSTATIONS: CURRENT SITUATION**

### **A. Number of Staffed Facilities and Lightkeepers**

In 1970, when the Coast Guard began the process of systematically automating lightstations, there were 264 staffed lightstations in Canada. Today, 50 remain in the two regions in question.<sup>14</sup>

Of the 27 staffed stations in the Pacific Region, nine are automated, meaning that the navigation aids can function in the absence of a lightkeeper (see Table 1). There are 37 indeterminate employees in the Region, 10 term employees, and seven positions filled by casual employees. Nine full-time equivalent employees fill periods of leave at remote sites on a casual basis. In the Newfoundland and Labrador Region, all 23 staffed stations are automated. There are 50 indeterminate employees, one term employee, and six positions filled by casual employees. Three additional full-time employees fill periods of leave at remote sites on a casual basis.

For health and safety reasons, and as required under Part II of the *Canada Labour Code*, remote stations are staffed with two lightkeeping positions in case one lightkeeper becomes ill or suffers an accident. Lightkeepers are represented by the Public Service Alliance of Canada (PSAC). The Union of Canadian Transportation Employees, a component of the PSAC, is the first point of contact when it comes to union matters in the workplace.

During recent fact-finding work in the Pacific Region in November 2010, Committee members spoke with lightkeepers at four non-automated stations: Carmanah Point, Trial Island, Entrance Island, and Bonilla Island (see Appendix 2). We also met lightkeepers at three automated facilities: Triple Island, Green Island and Cape Mudge.

In Newfoundland and Labrador, Committee members visited six staffed stations: Puffin Island, Long Point, Cape Race, Fort Amherst, Green Island (Fortune Bay) and Tides Cove Point (see Appendix 3). We visited three unstaffed stations, namely Peckford Island, Cape Pine, and Cape Spear.

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<sup>14</sup> There are no plans to remove four lightkeepers on Machias Seal Island in the Maritimes Region.

**Table 1 – Number of Staffed Lightstations, by Region and Type**

Type of Lightstation	Pacific	Newfoundland and Labrador	Total
Automated	9	23	32
Non-Automated	18	0	18
Total	27	23	50

Source: CCG, Brief, 20 April 2010.

Appendices 4 and 5 provide selected characteristics of the staffed stations in the Pacific Region and in the Newfoundland and Labrador Region, respectively.

### **B. Operating and Capital Costs**

The delivery of the Coast Guard's staffed lightstation program as defined by the agency involves performing and managing the lightkeeping function, managing the light and the equipment needed to keep the light working, and managing lightstation assets (i.e., the property and buildings).

At remote locations, helicopters and vessels are used to resupply lightstations and move lightkeepers, which contributes to higher maintenance costs. Of the 50 staffed facilities in the two regions, 29 are located at remote sites that have no year-round road access. There are five such sites in the Newfoundland and Labrador Region, whereas all but three of the 27 staffed sites on the Pacific coast are inaccessible by road (see Appendix 6).<sup>15</sup> In the Pacific Region, the provision of power to stations is a major component of the operational costs, given that power-generating equipment is needed for resident lightkeepers and their families.

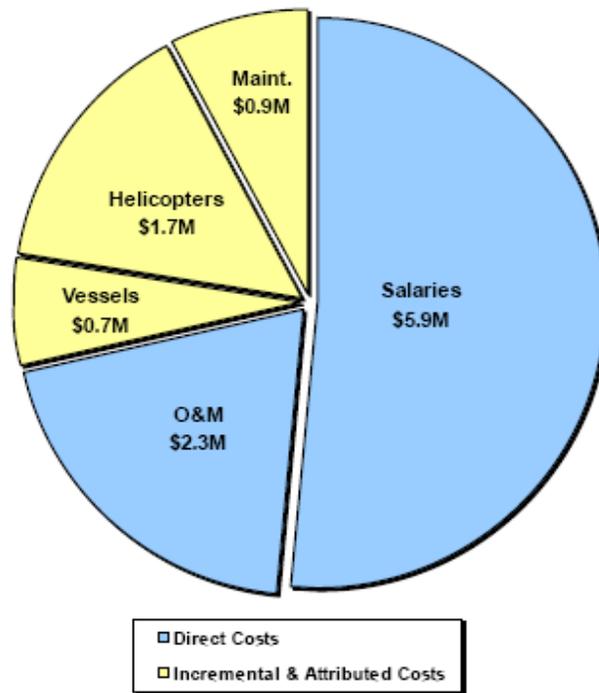
A costing exercise conducted by the Coast Guard dated March 2010 – the Strategic Activity Expenditure Review (SAER) – estimated total operational costs of the agency's staffed lighthouse program to be \$11.5 million in 2008–2009 (see Figure 1). The Newfoundland and Labrador Region accounted for \$3.2 million, the Pacific Region for \$8 million, and the Maritimes Region for \$0.3 million.

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<sup>15</sup> A number of lightkeepers in Newfoundland and Labrador were relocated in 2005 from remote stations to more accessible land-based stations where they could live in the community in their own accommodation.

The Coast Guard approached the SAER only from the perspective of identifying the costs associated with the presence of staff;<sup>16</sup> thus, as the SAER noted, no inferences can be drawn about anything other than the cost of the program. The removal of lightkeepers does not necessarily mean that savings equal to the cost of the staffed lighthouse program would be realized.<sup>17</sup>

**Figure 1 – Direct, Incremental and Attributed Costs of Staffed Lighthouses in Canada**



Source: CCG, Presentation, 20 April 2010.

As indicated earlier in this report, the Coast Guard hopes to remove all remaining lightkeepers in the coming years. However, the Committee is unaware of any specific plan to automate non-automated sites in the Pacific Region. Fisheries and Oceans Minister Shea estimated that a one-time investment of between \$5 million and \$10 million would be required to automate all remaining stations in this Region.<sup>18</sup>

<sup>16</sup> George Da Pont, *Committee Proceedings*, 20 April 2010.

<sup>17</sup> CCG, “Strategic Activity Expenditure Review, Marine Aids to Navigation, Fixed Aids – Staffed Lightstations” (hereafter “CCG, SAER”), Note, March 2010.

<sup>18</sup> The Honourable Gail Shea, Minister of Fisheries and Oceans, *Committee Proceedings*, 13 April 2010.

A human presence at staffed stations requires a number of activities that do not take place at unstaffed sites. The Coast Guard advised the Committee that limited refurbishment capital of approximately \$22 million had been provided over the past decade to upgrade infrastructure at staffed sites, and that the costs of maintaining buildings would in future become more significant.

From the Coast Guard's perspective, future investments in major capital projects could be avoided altogether if staff were removed from all lightstations. However, the agency was unable to provide the Committee with an estimate of total future capital expenditures, or when these might be required, because the condition of individual lightstation sites has not been assessed.

### **C. Elsewhere in Canada and Internationally**

The questions Minister Shea put to the Committee are whether the "additional services" that lightkeepers provide are necessary and/or can be provided by other means without compromising public safety.

In April 2010, the Minister indicated to us that years of experience, both in Canada and in all other developed countries, had shown that unstaffed stations are as reliable as staffed ones.

The Coast Guard likewise indicated that, consistent with a global trend, hundreds of lightstations have been automated and destaffed elsewhere in Canada – in the Maritimes, Quebec, and Central and Arctic regions – and that these facilities have operated successfully for more than a decade. The Coast Guard is not aware of any evidence that unstaffed lights increase risks for mariners, and indicated to the Committee that lights have been automated and destaffed in many parts of the world where the geography is similarly challenging, such as Alaska and Scandinavia. Only three developed countries were said to have lightkeepers at automated stations:

- France, which was proceeding with the removal of staff through attrition and by making alternative uses of sites;
- Portugal, which has kept a few lightkeepers with reduced duties; and

- South Africa, which has kept a few lightkeepers to prevent vandalism, undertake tourism functions and perform maintenance activities.

In support of destaffing, the Coast Guard also emphasized that all lightstations in the United States are unstaffed and automated (with the exception of Boston Harbor Light Station, the first lighthouse built in that country); that all lightkeepers were removed in Alaska (a state with a coastline similar to British Columbia's) well over 20 years ago; and that there are no staffed lightstations in the State of Washington.

Proponents of staffed lightstations, for their part, said that comparisons between Canada and other countries need to be put into context.

### **Summary of What the Committee Heard:**

- Countries with remote and expansive coastlines, such as Chile and Brazil, have retained staffed lights in order to maintain a “coastal watch” in areas strategically identified as high-risk.
- Although the global trend has been toward automation in the last 20 years, military or Coast Guard personnel in other countries have increasingly assumed lightkeeper duties formerly performed by lightkeepers.
- In the State of Alaska, the presence of the military and the United States Coast Guard (USCG) is enormous.<sup>19</sup> Some lightstations are co-located with other USCG facilities (e.g., for SAR) and can therefore be considered staffed. As for the State of Washington, one can drive along the entire coastline, unlike in British Columbia where the coast is much more remote and isolated.
- Ireland is restaffing its lightstations. Although Australia has destaffed its stations, some have caretakers and weather observers. Life-saving personnel are present at stations in England. At lighthouses in Portugal and Denmark, there are technicians with broader responsibilities for the operation and maintenance of navigation aids.
- A number of less developed countries continue to staff their lighthouses.

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<sup>19</sup> The USCG has been an agency of the U.S. Department of Homeland Security since 2003 and is one of the five branches of the U.S. military in wartime; unlike the civilian Canadian Coast Guard, it is a law-enforcement organization.

## NAVIGATION AND MARINE TRAFFIC

In 2009, when Fisheries and Oceans Minister Shea announced that the Coast Guard plan had been put on hold, she highlighted the fact that the provinces of British Columbia and Newfoundland and Labrador “are uniquely situated as Canada’s eastern and western most provinces,” and face “unique challenges.”<sup>20</sup>

Indeed, with its 28,956 kilometres of coastline, Newfoundland and Labrador has some of the most severe sea state conditions in Canada, notably frequent ice conditions and icebergs, reduced visibility, gales and storms. Ice is a year-round hazard to navigation.

In British Columbia, where the volume of marine traffic accounts for more than 70% of Canada’s total, the Committee learned that the 25,725-kilometre coast is very much a “coastal highway.” Oil tankers regularly sail along the coast on their way from Alaskan oil fields to southern refineries. Each year, thousands of merchant vessels enter B.C. ports. Tugboats towing coal and gravel barges and every imaginable type of freight share the waters with commercial fishing vessels of all types of gear, Canadian and American ferries, sport fishing boats, international cruise ships, and pleasure craft ranging in size from fragile kayaks to large yachts.

In this region, the Coast Guard advised the Committee that more aids to navigation may be needed because of the potential for growth in marine traffic in Kitimat, Vancouver harbour and Prince Rupert.

In British Columbia, it was also impressed on us that weather varies dramatically along the coast. In this respect, the mouth of Juan de Fuca has been called the “graveyard of the Pacific” because of the region’s harsh and varying weather conditions and the number of shipwrecks in the days before lightstations were built. There are vast stretches of coast, particularly on the western side of Vancouver Island and on the central and north coast, where there is no human presence except for lightkeepers.

The same holds true for parts of the remote coastline of Newfoundland and Labrador, the difference being that the province has much more tanker traffic but less air traffic. In the Pacific Region, coastal aviation is vital to the provincial economy. For many B.C. communities, float planes are the only means of transportation. The Pacific marine community

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<sup>20</sup> DFO, “Review of Automated Lightstation Staffing,” Ministerial statement, 30 September 2009.

also operates 12 months of the year, unlike the situation in Newfoundland and Labrador, where sea ice limits coastal marine traffic for part of each year.

As in other parts of the world, Canadian mariners are increasing their reliance on modern electronic navigation aids rather than traditional physical infrastructure, such as lightstations. The view that lightkeepers are no longer essential assumes that everybody on the water is properly equipped with the very latest in technology.

A major reason why there has been such “pushback” against lightstation destaffing in the two regions is safety concerns on the water.

### **Summary of What the Committee Heard:**

- Coastal communities rely on coastal waterways to move people and products, and electronic navigation equipment can and does fail.
- The main safety problems exist in the smaller recreational and fishing fleets. Although fishers and pleasure craft operators are increasingly using modern technology to navigate their vessels, not all are adequately equipped. Many boats do not have GPS, and many of those who do have the technology do not know how to use it correctly.
- For many small vessels, nothing much has changed from a technological standpoint. For instance, in Newfoundland and Labrador, most of the fishing fleet is made up of small boats less than 40 feet in length, and of those, a large proportion are open boats. Some may not even carry a compass or a VHF radio.
- Even though modern commercial ships use sophisticated on-board navigation equipment, merchant ship owners, managers, and operators wish to maintain staffed lightstations.
- The number of people using Canada’s waterways for recreational purposes is steadily increasing. Recreational boaters tend to have less training and less sophisticated navigational equipment on their boats than commercial vessels.
- Recreational boaters’ navigation equipment varies considerably, depending on the individual owner.

- Kayaking is rapidly growing in popularity, but many recreational kayakers do not carry GPS and/or are not well prepared for adverse weather and sea conditions.
- It is more important than ever to maintain the human safety network of which lightkeepers are an essential element. Any further destaffing of lighthouses will put mariners' lives at risk at a time when government has been encouraging people to adopt a safety culture.
- Traditional lighthouses assist smaller vessel operators in determining their location not only at night but also during the day, because of their high visibility and distinctive image. They are an essential backup when on-board navigation equipment fails. Replacing lighthouses with smaller metal structures will make daytime recognition more difficult because they cannot be seen at a distance.

## **AUTOMATED LIGHTSTATIONS**

At both non-automated and automated sites, lightkeepers' duties involve inspecting navigational aids (main light and foghorn, if there is one on site) to make sure they are working, reporting any significant deficiencies, and making general on-the-spot repairs to the light if needed. Duties also include general site maintenance, such as painting structures and maintaining the grounds.

At non-automated stations, lightkeepers contribute to the continued functioning of the navigation aids. At fully automated sites, the Coast Guard advised the Committee that the aids:

- can function properly in the absence of a lightkeeper;
- are powered by either a power grid or solar panels,<sup>21</sup> with diesel generators used for backup power;
- can be operated on a continuous basis without being frequently attended;

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<sup>21</sup> According to testimony received by the Committee, LED (light-emitting-diode) lights are easier to solarize and use less power. The solar units cost at least \$250,000 each. Jim Abram, Director, Discovery Islands–Mainland Inlets, Strathcona Regional District, *Committee Proceedings*, 30 November 2010.

- require only periodic human intervention for maintenance and servicing, which is performed as a matter of course for both staffed and unstaffed lightstations. If a light goes out at a staffed lightstation, it is most often looked after by CCG technical staff, not by lightkeepers; and
- are maintained by CCG technical staff who undertake all significant maintenance activities, whether a lightstation is automated or not.

According to the Coast Guard, automated lights are as reliable, meeting or surpassing a 99% reliability target (see Table 2).<sup>22</sup> When a light goes out at an unstaffed station, mariners notify the Coast Guard almost immediately and technicians are immediately sent to get it operating again.<sup>23</sup>

**Table 2 – Reliability of Major Shore Lights, by Region**

Year	Newfoundland and Labrador		Pacific	
	Staffed	Unstaffed	Staffed	Unstaffed
2008–2009	99.7%	99.8%	100.0%	99.9%
2007–2008	99.1%	98.4%	100.0%	99.9%
2006–2007	98.7%	98.7%	100.0%	99.8%
Average	99.1%	99.0%	100.0%	99.9%

Source: CCG, April 2010.

### **Summary of What the Committee Heard:**

- A human presence is required to monitor the automated devices and to report equipment malfunction.
- The 99% reliability rate for automated lights at unstaffed stations is misleading; it only refers to failures that were noticed. The lights are considered to be functioning until an outage is reported. It may be, however, that the Coast Guard is not always immediately notified that a light has gone out.

<sup>22</sup> For lighthouses, reliability refers to the time the light is not functioning. The Coast Guard targets average reliability levels of 99% (an international standard), meaning that the light operates 362 days per year. On a three-year average, major shore lights (both staffed and unstaffed) must be operational 99% of the time. For any individual light, the absolute minimum level of reliability must be 95%.

<sup>23</sup> George Da Pont, *Committee Proceedings*, 20 April 2010.

- A human presence is needed to remove ice, sleet, snow, condensation, salt, etc., that may obscure the light. There are no workable alternatives. Condensation on the windows of lantern houses is an ongoing problem at most lightstations in British Columbia, which lightkeepers deal with by using fans and heaters.
- Automated lights often break down. When an automated light goes out, a lightkeeper will do everything he/she can to repair the light, even if only to make temporary repairs until CCG technicians arrive.
- Automated lights will continue to need maintenance.
- At unstaffed facilities, there are delays in repairing failed lights even when mariners report outages. In the Pacific Region, most lightstations are remote and accessible only by helicopter and by boat (weather permitting).
- If a lightkeeper cannot fix a problem, he/she informs the Coast Guard base as to the nature of the problem; this helps to determine who and how many technicians to send, thus cutting down on servicing costs.
- The Coast Guard has reduced the intensity of the lights. The new LED (light-emitting diode) lights cannot be seen as far.
- If lightkeepers are removed, foghorns will also be removed, given that they require more power than solar panels can provide.
- Automated foghorns require vigilant human monitoring. When controlled by a videograph,<sup>24</sup> a foghorn is unreliable.
- Lightkeepers ensure the reliability of navigation aids by providing on-site security 24/7. Leaving stations unattended makes them vulnerable to theft and vandalism, especially at accessible locations near population centres.

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<sup>24</sup> A videograph detects the presence of fog by sending out a beam of light and detecting the reflected beam.

- Lightkeepers provide a very high level of site care. At many sites, the regular maintenance they perform is critically important for the preservation of structures that have important historic values.

## **STAFFED LIGHTSTATIONS: SAFETY-RELATED ISSUES**

In April 2010, Fisheries and Oceans Minister Shea indicated that the only outstanding issue left to “successful destaffing” of lightstations is the services lightkeepers provide in addition to their normal duties. These are services that they have taken on over the years, both formally and informally.<sup>25</sup> The Coast Guard’s position is that these services are not directly related to navigation aids, that their provision is outside of its core mandate, and that they fall under the mandates of other government departments or entities.<sup>26</sup>

Strictly as “keepers of the light,” lightkeepers may no longer be as necessary for navigation as in earlier days; but as participants in our discussions noted time and time again, the maintenance of the lights and caretaking of lightstation sites are only part of what lightkeepers actually do. Because of their presence at isolated and critical points along Canada’s coasts, lightkeepers perform a variety of safety-related functions and services that are vitally important to mariners and aviators.

The major worry expressed to the Committee on both coasts was a possible decrease in public safety should the Coast Guard proceed with its destaffing plan.

### **A. Reporting Weather Observations**

In the Pacific Region, the Committee learned that lightkeepers provide local weather reports that are broadcast to mariners and aviators and used to assist Environment Canada (EC) weather forecasters. (In Newfoundland and Labrador, lightkeepers do not provide such information to Environment Canada.)<sup>27</sup> A major concern on the west coast is the potential loss of such reporting.

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<sup>25</sup> The Honourable Gail Shea, Minister of Fisheries and Oceans, *Committee Proceedings*, 13 April 2010.

<sup>26</sup> George Da Pont, *Committee Proceedings*, 13 April 2010.

<sup>27</sup> On the Atlantic coast, human weather observations are provided only at Machias Seal Island, New Brunswick (twice a day).

All 27 staffed lightstations in the Pacific Region provide marine meteorological information once every three hours during daylight hours; this information includes wind speed and direction (estimated at many sites), visibility and sea state. The data are passed on to CCG Marine Communications and Traffic Services (MCTS) Centres, which broadcast the information on the CCG Continuous Marine Broadcast VHF weather channel. MCTS also forwards the lightkeepers' reports to EC, which is responsible for weather forecasting.

The Committee also learned that, in addition to their scheduled reports, lightkeepers submit special weather reports (or "specials") whenever weather conditions change significantly (e.g., visibility, wind or wave conditions) in order to warn mariners and aviators of significant drastic increases in wind and sea heights. These warnings are often based on their observations of deteriorating conditions spotted offshore, within sight of the station.

At 17 of the 27 lightstations, lightkeepers provide supplementary aviation weather information (temperature, cloud conditions and dew point (humidity)). Environment Canada provides the information to NAV CANADA, a private corporation responsible for civil aviation weather services. At two stations, lightkeepers provide core weather observations every six hours, which are shared internationally. At 23 of the 27 stations, temperature and precipitation observations are collected twice per day and contribute to the climate record of British Columbia.<sup>28</sup>

Environment Canada gathers the information it needs to develop its weather forecasts and warnings from other multiple sources,<sup>29</sup> including automated weather stations and weather reporting buoys, and contracted weather observers. In the Pacific Region, EC trained them on reporting and instrument use.<sup>30</sup>

EC officials indicated to the Committee that lightkeeper weather reports are useful, but not essential. Along with data from other sources, they help "ground truth" (confirm) weather predictions and may prompt EC forecasters to amend a forecast. But their value is limited and their reports "supplementary" to EC's core network, for two reasons:

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<sup>28</sup> These 23 lightstations are part of the national cooperative climate network, numbering about 650 locations across the country.

<sup>29</sup> Across Canada, the core observation network includes hourly observations from 600 automated weather stations, 77 buoys, 54 automated ship observations and over 230 airport observations provided by NAV CANADA, and satellite imagery.

<sup>30</sup> Except for five Coast Guard automated weather stations, EC also provides the weather equipment.

- Because CCG lightstations are equipped with minimal instrumentation, observations are less precise and complete (e.g., at many locations, wind speed is estimated, not actually measured).
- Information and data from automated stations and other parts of EC's observation network are recorded on an hourly basis, 24 hours a day, whereas lightkeeper observations are made only once every three hours during daytime.

From the standpoint of weather forecasting, precise hourly observations were said to be important in order to understand meteorological trends.<sup>31</sup>

With respect to reliability, land-based automated weather stations in the Pacific Region (which report on wind speed and direction, not sea state) were said to be available 95% of the time, while for weather buoys the figure given was approximately 90% in all of Canada. Outages for weather buoys were said to typically occur during storms at the end of the winter season. The devices are prone to rogue or high waves, which knock out their communications system.

Environment Canada officials further advised the Committee that if all remaining lightkeepers in the Pacific Region were removed, additional automated weather stations would be considered, but that the associated costs would not be significant. NAV CANADA likewise indicated that lightkeeper reports are not essential in terms of providing aviation weather; they provide additional, "supplemental" information.<sup>32</sup> The Coast Guard, for its part, said that before proceeding with destaffing, the agency would work with EC and NAV CANADA to assess any gaps in terms of weather reporting requirements.

### **Summary of What the Committee Heard:**

- People who make their living along the coast need accurate reports of local weather conditions. In British Columbia, mariners and floatplane pilots rely heavily on lightkeeper marine weather reports in order to plan their trips.
- On both coasts, the current network of EC automated weather stations and buoys is often out of order and not reporting.

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<sup>31</sup> Dave Wartman, Director, Atmospheric Monitoring, Meteorological Service of Canada, *Committee Proceedings*, 26 October 2010.

<sup>32</sup> Rudy Kellar, Vice President Operations, NAV CANADA, *Committee Proceedings*, 23 November 2010.

- Automated weather equipment frequently breaks down in extreme weather, when it is most needed. When automated systems fail, it may take weeks or months for them to be repaired, especially during long periods of bad weather.
- Automated buoys are prone to failure. Outages in the Pacific Region can sometimes last for months, subject to the availability of Coast Guard ships to transport EC technicians to service the buoys.
- On almost any day, data from some automated stations are “not available.”
- Even when automated weather collection systems and basic weather buoys are working and transmitting, they do not provide sufficient information to anticipate current or impending conditions. They provide wind speed and direction, but no information on sea conditions or visibility.
- Offshore buoys provide more information, but the information is geared to offshore commercial traffic and skilled, properly equipped mariners.
- The observations lightkeepers submit include information on sea state that is impossible for automated systems to provide (even when fully operational). Lightkeepers are able to estimate and report differences in wind speeds a few hundred feet offshore.
- Automated weather information is often incorrect; weather sensors are subject to errors. Lightkeepers, on the other hand, are reliable and consistent reporters of weather conditions. Automated weather reporting does not provide the accuracy and observations of a knowledgeable human being.
- Lightkeeper observations often result directly in updates to Environment Canada forecasts and the issuing of weather warnings.
- If lightkeeper reports were no longer available, there would likely be more accidents, given that automated reports are not always available and not as in-depth.
- Research shows that weather is a contributing factor in almost all fishing-related fatalities. The removal of lightkeepers will result in less reliable weather information and loss of life.

## **B. Reporting Local Weather and Sea Conditions**

The Committee learned that lightkeepers in both the Pacific Region and the Newfoundland and Labrador Region provide additional weather information to local mariners and aviators upon request. These observations are based on keepers' local knowledge of wind and sea conditions, as well as visual evaluations.

### **1. Mariners**

Given their strategic locations, most lightstations routinely provide local marine and weather information directly to mariners. Lightkeepers provide up-to-the-moment and area-specific information on weather and sea state. The Committee was told that, without such information, mariners would face the alternative of risking bad weather conditions while in transit to a destination point.

#### **Summary of What the Committee Heard:**

- In Newfoundland and Labrador and in British Columbia, weather along the coasts is unpredictable. Winds, currents, and microclimates mean that weather conditions can change dramatically over short distances, for example, when the wind is against the tide.
- Weather can change faster than Environment Canada can forecast.
- Accurate, real-time, local weather reporting is critical to decision-making. Knowing when it is safe to head out means that commercial traffic can operate more efficiently, and knowing when to seek shelter can mean the difference between life and death.
- The loss of local marine and aviation weather services could have economic impacts on marine-based industries.
- Lightkeepers provide critical information to vessels, particularly the smaller ones that do not have sophisticated weather instruments, and especially when electronic systems are down.
- Given that lightstations are at a higher elevation than vessels, mariners in areas of the Newfoundland and Labrador Region call lightkeepers to obtain directions on how to sail

around thick ice. Lightkeepers are also in a position to let fishermen know when their fishing gear is in danger of being lost due to pack ice or icebergs.

## **2. Aviators**

Floatplane pilots on the B.C. coast also call up lightkeepers for first-hand weather accounts, which allow for advance planning. For these aviators, the waterways along the coast are their runways. Lightkeepers provide information regarding visibility, cloudiness, winds and general weather.

With respect to aviation weather, NAV CANADA maintains weather observations at airports and other operationally significant locations throughout Canada, through both a human observation program and its own automated observation stations. The company also owns and operates weather cameras at specific locations throughout Canada to augment the provision of aviation weather, which is a relatively new program. Ten wide-angle weather cameras take a photo every 10 minutes, which can be accessed on the Internet by pilots and/or flight dispatchers to assist in decision-making prior to conducting a flight.<sup>33</sup>

In recognition that B.C. lightstations are situated in key strategic locations, NAV CANADA informed the Committee that it had negotiated an agreement with DFO to install weather cameras at some of those sites.

### **Summary of What the Committee Heard:**

- The weather reports provided by lightkeepers are essential to the needs of commercial and private seaplanes flying in coastal areas of British Columbia. Weather information is critical for pilots because events in an aircraft happen in compressed time.
- Aviators need these lightkeeper reports because coastal weather patterns in British Columbia are so notoriously variable. The province is one of the most challenging places in the world to fly in.
- CCG helicopter pilots themselves reference lightstation weather reports before departing on daily taskings.

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<sup>33</sup> Digital cameras with higher resolution are also being added to the company's network.

- When operating a float plane on the B.C. coast, all of the available weather information along the flight route is valuable.
- Weather is a contributing factor in most floatplane accidents. Some accidents over the years on the coast could have been prevented had there been better weather reporting.
- Lightkeepers provide floatplane pilots with critical information that cannot be otherwise obtained. Cameras alone may not provide enough information, and they can also be subject to down time, usually in bad weather and when they are most needed.
- The loss of the vital service provided by lightkeepers would jeopardize the safety of the many thousands of passengers who travel by float plane each year.

### **C. Assisting Vessels and Persons in Distress**

Canada's commitment to search and rescue at sea arises from its responsibility to ensure the safety of its citizens. Canada also adheres to the *International Convention on Maritime Search and Rescue* (1979) and to the *International Convention for the Safety of Life at Sea*, which affirms that "each Contracting Government undertakes to ensure that any necessary arrangements are made for coast watching and for the rescue of persons in distress at sea around its coasts."

The Coast Guard is responsible for providing the maritime resources in support of SAR in areas of federal responsibility. Canada relies on the use of resources such as CCG vessels, Canadian Navy vessels and helicopters, and the thousands of vessels and volunteers of the Canadian Coast Guard Auxiliary (CCGA).<sup>34</sup> The SAR system is supplemented by other local resources and vessels of opportunity that navigate nearby.

SAR taskings are done by Joint Rescue Coordination Centres (JRCC), which manage the National Defence and the Coast Guard response to air and maritime SAR incidents.<sup>35</sup> The JRCC are staffed by SAR coordinators who operate 24/7, year-round, and who dispatch the

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<sup>34</sup> The CCGA is a non-profit organization of dedicated volunteers – commercial fishers and pleasure boaters who donate their time and vessels, and volunteers from local communities who enrol to crew community-based response vessels.

<sup>35</sup> There are three JRCCs in Canada. These are located in Esquimalt (Victoria), Halifax and Trenton. There are two sub-centres located in the City of Québec and St. John's.

most effective resources to deal with a particular incident. Coast Guard Marine Communications and Traffic Services (MCTS) Centres are a key part of the network;<sup>36</sup> they respond to distress calls from persons or vessels.

The Coast Guard advised the Committee that if no vessels of opportunity are present or willing, JRCC task Coast Guard resources, including lightkeepers, if required. But unlike full-time, fully trained SAR units, lightkeepers are not part of the formal SAR system. They receive no SAR training, and equipment is limited to what is required for a station's operation. Lightkeepers are occasionally called upon to assist in a SAR operation, but only if an incident is in their immediate vicinity and if the assistance required is within their capability. In other words, lightkeepers were said to play a SAR role only because "they happen to be there," in the same way that a vessel of opportunity would be asked to respond.

In sum, the Coast Guard advised us that Canada's marine SAR system does not rely on lightkeepers, and that their removal would not affect the marine SAR system.

That said, the Committee heard a number of stories of people getting into trouble and being rescued or helped by lightkeepers. In British Columbia, for instance, the lightkeeper at Trial Island Lightstation near Victoria reported 12 kayakers who were capsized by a boat wake last summer. The timely interventions of the lightkeepers at Trial Island have in fact been instrumental in saving dozens of kayakers over the past several years.

In October 2010, the lightkeepers at Green Island Lightstation in Fortune Bay, Newfoundland, off the Burin Peninsula, saved a man and his mother who were travelling back to their home in Saint-Pierre and Miquelon when an unexpected storm blew up. The lightkeepers were able to pull their boat to shore, and gave them shelter until the storm subsided five days later. Had there been no lightkeepers, these people would more than likely not have survived.

### **Summary of What the Committee Heard:**

- Lightkeepers *do* contribute to saving lives.

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<sup>36</sup>There are five MCTS Centres in the Newfoundland and Labrador Region, and five in the Pacific Region. The CCG MCTS program delivers radio communications and vessel traffic services to the marine community and the public at large 24 hours a day, 365 days a year.

- Lightkeepers keep their VHF radios tuned to Channel 16 – the international calling and distress channel – 24 hours a day, are good observers in the area they can see, and frequently spot mariners in distress.
- Lightstations are placed in strategic locations along the coasts (e.g., high-traffic areas of specific danger, at the confluences of waterways); lightkeepers are therefore in a unique position to report persons or vessels in distress.
- Lightkeepers have been integral in the successful outcome of many SAR operations. They frequently play an active role in saving lives as first-line detectors or responders for marine incidents.
- Lightkeepers' participation in SAR should be increased through better equipment and training.<sup>37</sup>
- In some cases, station boats were taken away from stations, which prevented lightkeepers from getting involved in SAR.
- When mariners in trouble have managed to reach land, they did so usually because of the presence of a lightkeeper, not a lighthouse. An unstaffed lighthouse is of little use to someone in trouble.
- There is a rapidly growing recreational community in search of wilderness experiences in rugged and remote parts of Canada's coasts. Urban people are increasingly visiting isolated areas, but many lack the skills and knowledge to survive should they encounter difficulties at sea.
- The local knowledge, intelligence and experience of lightkeepers can often be an invaluable asset to CCG SAR efforts.
- Lightkeepers assist in communications by relaying weak VHF radio signals or distress calls from radio blind spots. They provide a valuable communications link where cellular services are unavailable.

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<sup>37</sup> Lightkeepers are trained in basic boat handling, first aid and CPR, marine emergency duties, and the transportation of injured persons.

- In Newfoundland and Labrador, the rugged terrain along the coast interferes with, and in some cases precludes, VHF radio communication within many bays and inlets that are typically the most heavily travelled and the most popular fishing and recreational areas.
- Lightkeepers play a significant role in preventing the need for SAR operations. Towing grounded vessels or boats with engine problems, supplying fuel, or simply giving directions are preventive measures that keep situations from deteriorating to the level where SAR assistance is required.
- Lightkeepers may be asked to keep track of passing boats if boats are overdue or reported missing.
- Many mariners, especially pleasure boaters and fishermen, place a high value on staffed stations because of the assistance they might one day need from lightkeepers. Knowing there is a human presence is a comfort.
- As fishing fleets decline in numbers (in some regions), there are fewer other nearby vessels available to assist. Many of the smaller boats fishing under individual quota management regimes travel farther out to sea alone during the season and “fish to the market,” that is to say when prices are best and conditions are worst.
- Staffed lightstations offer sanctuary and first aid. Quite often people come into a lightstation when they are in trouble or when something breaks down. For hikers, kayakers and others in isolated places, often their nearest reliable human contact is a lightkeeper.
- The value of lives saved by lightkeepers is greater than any savings resulting from destaffing.

## STAFFED LIGHTSTATIONS: THEIR MULTIPLE ROLES

Lightkeepers perform a variety of other important functions or services that are unrelated to marine safety, but which benefit government agencies and the public.

In the Pacific Region, the Committee was made aware that lightkeepers support important scientific research. For instance, they make climate observations on behalf of Environment Canada, help protect, and occasionally reset, tsunami and seismic monitoring equipment for Natural Resources Canada, and take daily water temperature and salinity measurements for DFO's Institute of Ocean Sciences.<sup>38</sup>

Lightkeepers on the Pacific coast also participate in the B.C. Cetacean Sightings Network, a program that collects reports of whales, dolphins, porpoises and sea turtles, many of which are threatened or endangered species. The Network considers lightkeepers' whale sightings, which are used for scientific research and conservation purposes, to be invaluable, especially in remote areas.

At Trial Island (near Victoria, British Columbia), which is home to the greatest concentrations of rare and endangered plants in North America, DFO and B.C. Parks have a partnership agreement to protect the fragile ecosystem. Lightkeepers are volunteer stewards of a provincial ecological reserve; they manage the plant resources there and protect the natural environment.

Lightstations that are located in national or provincial parks are heavily visited by hikers. In summer, parks personnel are present to assist park users, but in winter lightkeepers are the only residents to whom injured hikers can go for assistance (i.e., first aid). They also help in coordinating medical evacuations. At Carmanah Point Lightstation, located on the west coast of Vancouver Island at the northwestern entrance of the Juan de Fuca Strait, lightkeepers report wildlife sightings to Parks Canada wardens and other government agencies (e.g., sea otter or bird sightings for their data bases, or the presence of large carnivores such as wolves, cougars or bears). They post information signs for hikers if there are troublesome animals in the area, investigate reports of injured wildlife, and confirm sightings of carnivore tracks.

Six of the 24 staffed lightstations in British Columbia are accessible on foot by hiking trails; all six are on the west coast of Vancouver Island and are visited by tourists.

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<sup>38</sup> At some stations, these measurements were said to have been taken since 1936. This information is used to determine the approximate time of herring spawn, fish migration, and oyster spawn.

The Committee learned that various tourism-related activities have become a part of the daily routine of many lightkeepers. Lighthouses are tourism magnets and in Newfoundland, where most lightstations are accessible by road, the lightkeeping function, in addition to regular duties, includes a public relations role. People who live in coastal communities said that they view lightkeepers as valuable tourism assets, or “tourism ambassadors” as they were frequently called, because they enhance visitors’ experiences by telling interesting stories about the sites.

At one station in the province, Long Point, the lightkeeper is not even “on” or “at” the light, but in a nearby office which does not even afford a view of the ocean. The keeper served at the light itself, a well-known vantage point for observing the fishing and sealing fleet, until being relocated in recent years. Local fishermen complain vehemently about the loss of eyes on the water, but tourism interests laud his present role with visitors.

Staffed lightstations are involved in the RCMP’s Coast Watch Program, which assists in identifying persons, vessels, vehicles and aircraft that may constitute a threat to Canada’s national security, or that are involved in illegal activities (e.g., drug importation, illegal immigration). All coastal interests are invited to participate in the program, including mariners and the Canadian Coast Guard Auxiliary. Given their high vantage point and intimate knowledge of local vessel traffic, lightkeepers are in an excellent position to be the RCMP’s extra “eyes and ears.” In fact, their very presence was said to be a deterrent to illicit activities.

A number of people on both coasts expressed the view that staffed lightstations are important because they are often the only federal presence in rural regions, or in remote and otherwise uninhabited coastal areas. As such, they are a means of flying the flag and demonstrating national sovereignty.

Participants in our discussions, especially in the Pacific Region, advised that lightkeepers could do more, and that the role of staffed lightstations could be expanded in order to assist other government agencies in delivering their programs.

For instance, staffed lightstations could house marine response clean-up equipment; having such resources available on site would improve response time in remote areas. Environmental monitoring and the reporting of incidents were also considered important, especially if there is a future increase in marine traffic. In this regard, the lightkeeper at Carmanah Point Lightstation was frequently mentioned in our discussions as having been the

first to report the *Nestucca* oil spill drifting toward western Vancouver Island in 1988; his early warning was said to have given government agencies a jump-start on an appropriate response.

Some hoped to see the role of staffed lightstations in the Pacific Region expanded as helicopter refuelling stations, as research facilities for government agencies, universities and nongovernmental organizations, and as staging grounds for SAR. Other suggestions, to name a few, included: formally making use of lightstations as platforms to monitor fishing fleets and to observe marine traffic; recognizing the services lightkeepers perform in assisting and providing information to tourists: enhancing lightkeepers' meteorological reports: and training lightkeepers in the maintenance of NAV CANADA weather cameras.

It was also impressed on the Committee that staffed lighthouses should be looked at as multi-purpose platforms; the infrastructure is already in place, their locations are strategic, and lightkeepers are in a position to assist any government operation at any given time.

Lightkeepers were described to us as skilled “multi-taskers” who are able to easily adapt to changing roles expected of them in their work (e.g., they can simultaneously monitor VHF radio frequencies, keep an eye out for changing weather conditions, visually observe vessels or air traffic, etc.).

The Committee frequently heard people say that lightkeepers could do more. In fact, we heard that lightkeepers *did* do more until CCG began taking action to reduce their duties as part of the planned destaffing process.

### **Summary of What the Committee Heard:**

- The Committee heard that the Coast Guard engaged in a strategy to downplay the role and capabilities of staffed lightstations to support the destaffing effort, and that lightkeepers, for their part, had sought to enhance the services they voluntarily provide.
- Stakeholders speculated that since 1998, when the government of the day put a halt to the destaffing process, CCG management deliberately reduced lightkeepers' duties and the services they provide, to make lightkeepers redundant and their removal inevitable. Numerous examples in support of this theory were advanced in British Columbia:
  - Discouraging lightkeepers from participating in search and rescue operations, to the extent that some lightstation boats were taken away and that some lightkeepers brought their own boats to their stations.
  - Removing foghorns from most lightstations – only three stations have them today.

- Lowering weather reporting requirement from hourly reports during daylight hours to reports once every three hours.
  - Reducing the amount of information required to be given in aviation weather reports in 17 stations, and removing the ability to provide aviation weather reports in 10 lightstations.
  - Reducing weather reporting criteria so as to make it very difficult for lightkeepers to report significant change in weather “specials” (i.e., immediate reports of significant changes in conditions).
  - Gradually eliminating various training programs.
- Coast Guard managers that the Committee heard from, however, stated that some duties were eliminated as being outside the Coast Guard formal mandate.

## CONCLUSION AND RECOMMENDATIONS

The Coast Guard’s previous attempt to remove Canada’s remaining lightkeepers in the mid-1990s had met with widespread and overwhelming opposition. Appearing before the Committee earlier this year in April 2010, the CCG Commissioner suggested that the Committee assess whether views had changed.<sup>39</sup>

In our deliberations, opposition to destaffing was overwhelmingly negative and greatest in British Columbia. People’s views have not changed.

The only support for the Coast Guard plan came from the B.C. Chamber of Shipping (COS), which favoured a resumption of the destaffing process “in recognition of the reality that there is no human function performed that cannot today be substituted with technology.”<sup>40</sup> All other representations made to the Committee by persons, groups or organizations made in person, by letter or by e-mail – and there were hundreds – either opposed destaffing categorically or opposed a one-size-fits-all approach to destaffing.

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<sup>39</sup> George Da Pont, *Committee Proceedings*, 20 April 2010.

<sup>40</sup> Captain Stephen Brown, President, Chamber of Shipping of British Columbia, Letter to the Chair, 24 August 2010. COS represents international and domestic shipping in the region, including ship and vessel owners, B.C. Ferries, vessel agency companies, cargo interests, terminal interests, Port Authorities, pilotage, marine support and service companies

For instance, the Vancouver-based International Ship-Owners Alliance of Canada (ISAC),<sup>41</sup> whose members also belong to COS, strongly opposes the plan and indicated to the Committee that COS had in fact never consulted ISAC on its position.<sup>42</sup>

Notable organizations that oppose lighthouse destaffing include, to name a few: Seaspan, Canada's largest marine transportation company; the B.C. Floatplane Operators Association, representing the operators of all such craft in British Columbia; the BC Ferry and Marine Workers' Union, representing over 4,000 members; the Fish, Food and Allied Workers, representing 20,000 workers in Newfoundland and Labrador, most of whom are employed in the fishing industry; and the Canadian Auto Workers Local 2183, representing workers at the CCG's Pacific Region Marine Communications and Traffic Service Centres – a group of public servants who know first-hand what lightkeepers do. (For a list of persons and organizations who participated in our review, see Witness List and Fact-Finding.)

What follows are a few general observations the Committee wishes to make on the matter of lighthouse destaffing and public safety.

Although automated lights are already common in Canada and elsewhere, and they may have proven to be reliable to the extent that mariners in these regions are at least reconciled to the change, they are considered to be operating unless an outage is reported. The Coast Guard's 99% reliability target at unstaffed lighthouses assumes that the agency is always immediately notified by mariners when a light has gone out, which may not always be the case. If a light cannot be seen because it is covered by snow, sleet, ice, or bird droppings, or obscured by condensation, and if no one is there to clean it off, the light is of no use to anyone.

Matters respecting the intensity, character or visible range of automated lights, however, were not foremost on people's minds.<sup>43</sup> What they were most concerned about is the loss of public safety-related services performed by lightkeepers, most of which are preventative in nature. Public safety issues were forcefully brought up on both coasts, where the term "eyes

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<sup>41</sup> ISAC represents local and international merchant ship-owners, managers, and operators of ships, who, collectively, control a fleet of over 500 ocean-going vessels and employ over 10,000 sea-going and shore-based employees.

<sup>42</sup> Kaitiy Arsoniadis-Stein, President and Secretary-General, International Ship-Owners Alliance of Canada Inc., *Committee Proceedings*, 30 November 2010. It was suggested in testimony of the same date that the B.C. Chamber of Shipping supported de-staffing in the expectation that this would help it get additional navigational aids tailored to larger vessels.

<sup>43</sup> In Nova Scotia, fishermen complained about the dimness of automated, solar-powered lights compared with those previously run off generators or the provincial power grid.

and ears” of the coast is bestowed on lightkeepers and where people hold the Coast Guard to its larger safety mandate and its motto of “Safety First, Service Always.”

Lightkeepers are relied upon to supplement whatever technology is available; they are the ultimate back-up or safety net. In this regard, the Committee was frequently reminded that electronic navigation equipment can and does fail.

In Nova Scotia, where there are no longer any lightkeepers, the message fishermen left with the Committee was that there is still a need for staffed lighthouses. There, lightkeepers had also been the “eyes and ears” of mariners and an important part of the maritime safety net, providing information on local weather and sea conditions. They had often supplied their own CB radios, and later VHF radios, to communicate. Although fishermen today now depend on electronic equipment for navigation, they still appreciate the presence of lightkeepers on Machias Seal Island, the only staffed facility left in the Maritimes Region.

In the Pacific Region and in the Newfoundland and Labrador Region, user groups essentially all said the same thing: lightkeepers are indispensable, automated equipment cannot compare with the certainty and reliability of a lightkeeper’s watchful eyes on the skies and on the water, and technology cannot replace the knowledge and judgment of an experienced lightkeeper. As one participant at our meetings said, our aircraft are equipped with the most sophisticated navigational equipment known to man, but we would not fly in them without a pilot.

It is CCG policy to review systems of navigation aids on a cyclical basis in order to assess any changes to safety risks in particular waterways, and to ensure an appropriate response – a process involving consultation with user groups. This policy, however, applies only to the navigation aids (e.g., the lights), not the lightkeeping function.

In the Pacific Region, the Committee was advised that the removal of lightkeepers would compromise marine safety by decreasing the reliability and accuracy of weather information, which helps prevent incidents due to poor weather conditions.<sup>44</sup> If lightkeepers were removed, Environment Canada could replace their input with additional automated weather stations and buoys and perhaps still meet its own reporting standards, but users told us that destaffing would degrade the quality of the marine weather reports they would receive.

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<sup>44</sup> Lightkeepers in Newfoundland and Labrador do not provide such weather reports.

In British Columbia, we heard over and over that automated weather systems are inaccurate and unreliable: they are often out of commission, are most likely to crash when they are most needed, take a long time to be repaired, and give incomplete information in that they do not report on sea state, visibility and other aspects of local conditions that are important to the users. Sometimes they provide incorrect information even when operational.

Staffed lightstations also provide extremely valuable real-time weather information on local conditions ahead. What people told us time and time again is that getting such up-to-the-moment information is critical when planning voyages and when monitoring conditions during such trips.

Moreover, removing lightkeepers will necessarily eliminate lightkeeper participation in SAR and other related assistance. Lightkeepers often play a vital role in SAR-related activities, the Committee learned, and also assist vessels and persons in distress in less spectacular ways.

Although lightkeepers are not properly equipped or trained for SAR operations, they do help save lives by spotting mariners in distress, relaying weak VHF radio signals, helping track down overdue boats, assisting vessels in distress with pumps, providing first aid and sanctuary, patching boats, preparing staging grounds for medical evacuations, and so on. Fishermen and recreational boaters, including kayakers, place a very high value on staffed facilities undoubtedly because of the assistance they might one day receive themselves from a lightkeeper.

The point was often made that technology and machines are unable to provide on-the-scene assistance to mariners in distress, and that there are no viable alternatives to a living, breathing human being. Lightkeepers contribute to saving lives; we heard this over and over, especially in British Columbia.

The Committee was often asked in the regions “What is the value of a human life?” The overwhelming majority of the people we spoke to made it clear that they still want people on the lights. The services lightkeepers perform are held as essential for their safety.

The Committee can only conclude that staffed lightstations and lightkeepers play a key role in public safety, and that any cost savings realized from destaffing lighthouses will come at a very high price – that is the risk of loss of life. For this reason, the Committee cannot support the Coast Guard’s 2009 destaffing plan.

Although our review was not specifically about money, the Committee wishes to convey what others have said on the subject of costs: no cost-benefit analysis has ever been done that would justify the destaffing of lighthouses in Canada. Also, a number of questions remain unanswered. For instance, what cost savings are currently being realized as a result of lightkeepers' preventive functions (e.g., reporting on weather, sea state and ice conditions)? What would be the costs to other various departments and agencies if lightkeepers were removed? What would be the cost of automating the remaining lights in British Columbia?

The Coast Guard's destaffing plan is widely viewed in the regions as being "penny wise and pound foolish." It was frequently suggested to us that senior management is completely out of touch with people who live and work on the coasts, and that instead of destaffing lighthouses, the Coast Guard should consider reducing administrative budgets in regional offices and at headquarters in Ottawa to save on costs. Some consider it wasteful not to make continued use of staffed stations, given the improvements made in recent years to infrastructure at a number of sites.

The question "Why are we here again discussing this matter?" frequently arose. Indeed, given the relatively small amount of funding needed to operate staffed lightstations, one wonders why this issue has persisted for so long.

If lightkeepers are to be retained, as the Committee recommends, the Coast Guard would be well-advised to look at ways to make better use of them by expanding their duties. Lightkeepers could do more to assist other government departments and agencies in delivering their programs. Depending on the lightstation, they already perform a variety of functions or services that are unrelated to navigation aids or marine safety, and part of the Coast Guard's mandate is to support the work of other government departments and agencies.

Depending on the lightstation, lightkeepers report on weather and sea conditions, collect long-term scientific data that would otherwise be difficult to obtain, protect rare wildlife and plant species, give first aid assistance and other help to tourists and hikers, to name a few functions. They all support the RCMP's Coast Watch Program and provide a sovereign presence.

In fact, it was pointed out to the Committee that lightkeepers provide services to the public, both directly and indirectly, for at least seven federal government departments and agencies.<sup>45</sup>

Each lightstation is unique and needs to be evaluated individually, on a station-by-station basis, with input from the lightkeepers themselves and from the Coast Guard's clients, which include the "recreational boating community, commercial shippers, commercial fishers (and their associations), and Canadian citizens at large."<sup>46</sup>

The Coast Guard needs to abandon its blanket, one-size-fits-all approach to staffing. In our view, what has been sorely lacking is a long-term policy on staffed lightstations.

Lightkeepers perform a variety of important tasks at very modest cost. They are held in very high regard on both coasts. Regrettably, they appear to be unappreciated by their employer, which prompted some discussion at our meetings as to whether or not the administration of lighthouses in Canada might be transferred to another government department or agency (e.g., Department of National Defence, Parks Canada, Public Safety Canada, Transport Canada). However, the public does not look at public services within the context of the particular mandates of departments or agencies. In our view, the focus should be on the value of the services that lightkeepers provide, not mandates. Staffed lighthouses should be seen as an opportunity, not a liability.

As a Special Operating Agency, the Coast Guard has much more operational and financial flexibility than a conventional department of government. On the question of funding, the agency could explore ways of sharing the financial burden with other departments or agencies that benefit from staffed lightstations, and enter into contractual arrangements for shared contributions.

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<sup>45</sup> Steve Bergh, President, BC Lightkeepers, Responsibilities for Lightstation Services, Brief, 4 May 2010. The seven departments and agencies listed by the late Steve Bergh are: the Department of Fisheries and Oceans; the Department of the Environment; the Department of Natural Resources; the Department of Transport; Public Safety Canada; the Department of National Defence; and Parks Canada.

<sup>46</sup> CCG, Aids to Navigation Program, <http://www.ccg-gcc.gc.ca/eng/Ccg/atn/Home>.

**Recommendation 1:**

The Committee recommends that the Canadian Coast Guard halt its current destaffing plan, and that destaffing, continued staffing, or restaffing be determined on a lightstation-by-lightstation basis through appropriate guidelines and thorough consultations. Until this is completed, current lightkeeper staff levels should be maintained in the Pacific Region and in the Newfoundland and Labrador Region.

**Recommendation 2:**

The Committee recommends that a long-term policy for lightstations be developed that will obviate cyclical reviews and that ensures continuation of a suitable level of staffing.

**Recommendation 3:**

The Committee recommends that the guidelines and consultations (as called for in Recommendation 1) take account of:

- a) all the purposes served or potentially served by lightkeepers in a practical and cost-effective manner;
- b) all the agencies and/or stakeholders involved with lightstations, including possible cost-sharing agreements; and
- c) the views of lightkeepers, user groups, coastal communities and other interested parties, both in the local areas and elsewhere as appropriate.

**Recommendation 4:**

The Committee recommends that a comprehensive cost-benefit analysis be undertaken on the full range of services provided by staffed lightstations prior to any further discussion or evaluation of Canada's lightstations.

**Recommendation 5:**

The Committee recommends that a review be conducted to determine the most cost-effective means of maintaining and servicing staffed lightstations, including potential energy savings which can be made available through new approaches to generating power for the needs of personnel on such stations.

## APPENDIX 1

### BACKGROUND ON AIDS TO NAVIGATION

In Canadian waters, the Canadian Coast Guard (CCG) provides navigation aids and other services to support the safe, economical, and efficient movement of ships.

In 1995, the Coast Guard was transferred from the Department of Transport to the Department of Fisheries and Oceans (DFO). In December 2003, the policy functions related to Coast Guard responsibilities for regulatory policy for marine safety, boating safety and navigable waters protection were transferred back to Transport. In April 2005, the Coast Guard became a Special Operating Agency within DFO:

- to affirm the CCG as a national institution;
- to emphasize its role in providing the maritime services required by users of Canadian waterways;
- to confirm the CCG as the operator of the government's civilian fleet in support of programs within DFO and in other government departments; and
- to enable the CCG to focus on service delivery and to provide operational and financial flexibility.

CCG headquarters are in the National Capital Region. The CCG Commissioner, the Chief Executive Officer, is accountable to the Deputy Minister of DFO. The CCG Deputy Commissioner, who reports to the Commissioner, is the agency's Chief Operating Officer.

Lighthouses fall within the legislative authority of the Parliament of Canada, as set out in section 91(9) of the *Constitution Act, 1867*. Section 91(9) gives the federal Parliament legislative authority over "Beacons, Buoys, Lighthouses, and Sable Island." In addition, at the time of Confederation, section 108 transferred to the federal government the ownership of those provincial public works and properties listed in the third schedule to the Act, including "Lighthouses and Piers, and Sable Island."

The *Oceans Act* gives the Minister of Fisheries and Oceans responsibility for services for the safe, economical, and efficient movement of ships in Canadian waters through the provision of aids to navigation (AtoN), marine communications and traffic management services, icebreaking and ice management services, and channel maintenance. The Act also gives the Minister responsibility for the marine component of the federal search and rescue (SAR) program, marine pollution response, and support to other government departments, boards, and agencies through the provision of ships, aircraft, and other services. The *Canada Shipping Act, 2001* gives the Minister responsibilities with respect to aids to navigation, Sable Island, SAR, pollution response, and vessel traffic services.<sup>47</sup>

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<sup>47</sup> CCG, *Serving Canadians*, <http://www.ccg-gcc.gc.ca/e0004251>.

Chapter 5, Regulation 14, of the International Maritime Organization's *International Convention for the Safety of Life at Sea* (SOLAS), to which Canada is a signatory, states:

The contracting governments undertake to arrange for the establishment and maintenance of such aids to navigation as, in their opinion, the volume of traffic justifies and the degree of risk requires, and to arrange for information relating to these aids to be made available to all concerned.<sup>48</sup>

The Coast Guard's clients include commercial shippers, commercial fishers (and their associations), the recreational boating community, and Canadian citizens at large.<sup>49</sup> The vessels operated by these mariners have varied capabilities. There are:

- *Category I* certified commercial vessels, which are used for commercial activities and which operate with charts and sailing directions, and are equipped with certified on-board navigational aids (e.g., a compass, radar and electronic positioning to support long-range and/or low-visibility navigation). These vessels are operated by professionally trained and certified personnel in accordance with applicable *Canada Shipping Act* regulations;
- *Category II* uncertified commercial vessels, which are used for commercial activities (e.g., fishing vessels, towing vessels) but to which *Canada Shipping Act* regulations do not apply in terms of requirements for on-board navigational aids. They operate with charts, are normally equipped with a compass and timepiece suitable for short-range navigation, and are operated by a person who may or may not have certification and who relies to a large degree on local knowledge; and
- *Category III* pleasure craft operated by an owner or under charter, rent or loan. These craft operate with charts and are normally equipped with a compass and a searchlight for night-time use of short-range marine aids.

The objective of the Coast Guard's AtoN program is "to manage, maintain, and provide aids to navigation in Canadian waters in order to facilitate safe and expeditious movement of maritime traffic to protect the marine and freshwater environment, maintain maritime safety and to facilitate maritime commerce and ocean development."<sup>50</sup>

The Aids to Navigation program involves the provision of short-range marine aids numbering over 17,000, including visual aids (fixed aids, lighthouses and buoys), aural aids (foghorns), radar aids (reflectors and beacons) and long-range marine aids, including electronic aids, such as the Differential Global Positioning System. The national standards are as follows:

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<sup>48</sup> CCG, *Report on the Review of Short Range Marine Aids to Navigation*, February 2001, <http://www.dfo-mpo.gc.ca/ae-ve/reviews-examens/00-01/marine-eng.htm>. The SOLAS Convention governs large commercial vessels operating in multiple jurisdictions.

<sup>49</sup> CCG, *Aids to Navigation Program*, <http://www.ccg-gcc.gc.ca/eng/Ccg/atn/Home>.

<sup>50</sup> Ibid.

- Visual aids are designed, where feasible, to be visible at least 75% of the time during the worst month of the navigation season.
- Aural aids may be provided when the design availability target of 75% cannot be achieved by visual means alone, for uncertified commercial vessels only.
- Radar aids may be provided when the design availability target of 75% cannot be achieved by visual means alone, for certified commercial vessels only.
- The overall target level for operational reliability for the short-range aids to navigation system is 99%, calculated over a three-year period.<sup>51</sup>

The Coast Guard advises that short-range navigation aids are provided in accordance with mariner (client) needs where the traffic and level or risks justify their provision. Aids systems in Canada:

- are designed in consultation with local mariners through Levels of Service reviews;
- consider elements such as visibility, reliability, location and audibility (for aural aids, such as foghorns);
- are based on a risk and economic assessment to ensure the most effective and efficient technology is used;
- are reviewed periodically with input from users (i.e., CCG clients for whom they are designed);
- are designed to assist navigation and do not replace prudent navigation practices or the use of on-board navigation equipment; and
- evolve with changing needs and technologies.<sup>52</sup>

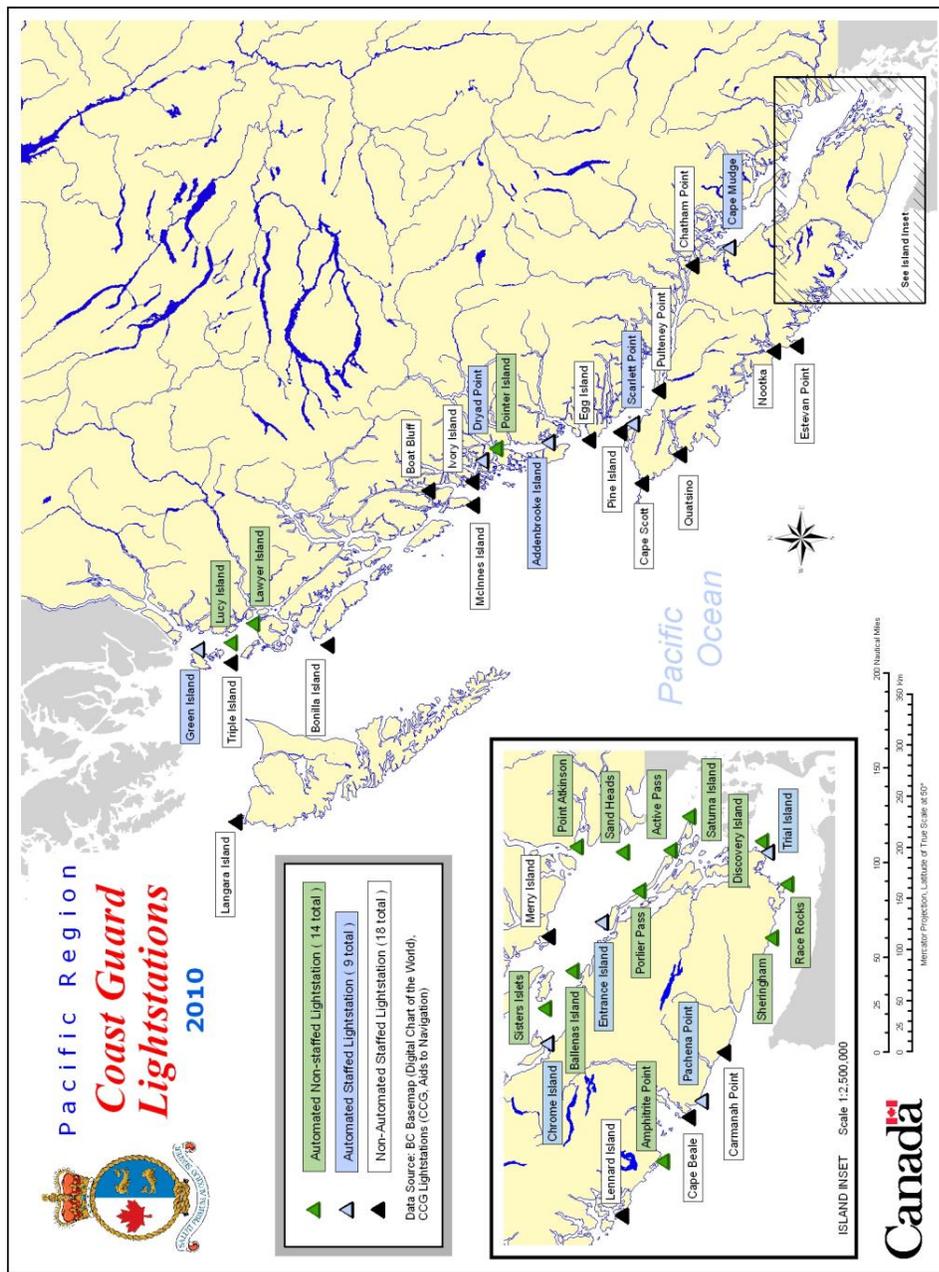
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<sup>51</sup> CCG, *Aids to Navigation*, [http://www.ccg-gcc.gc.ca/eng/Ccg/wm\\_Los\\_Page3](http://www.ccg-gcc.gc.ca/eng/Ccg/wm_Los_Page3).

<sup>52</sup> See CCG, *Levels of Service*, May 2010 (Update), <http://www.ccg-gcc.gc.ca/folios/00037/docs/Levels-of-Service-eng.pdf>.

APPENDIX 2

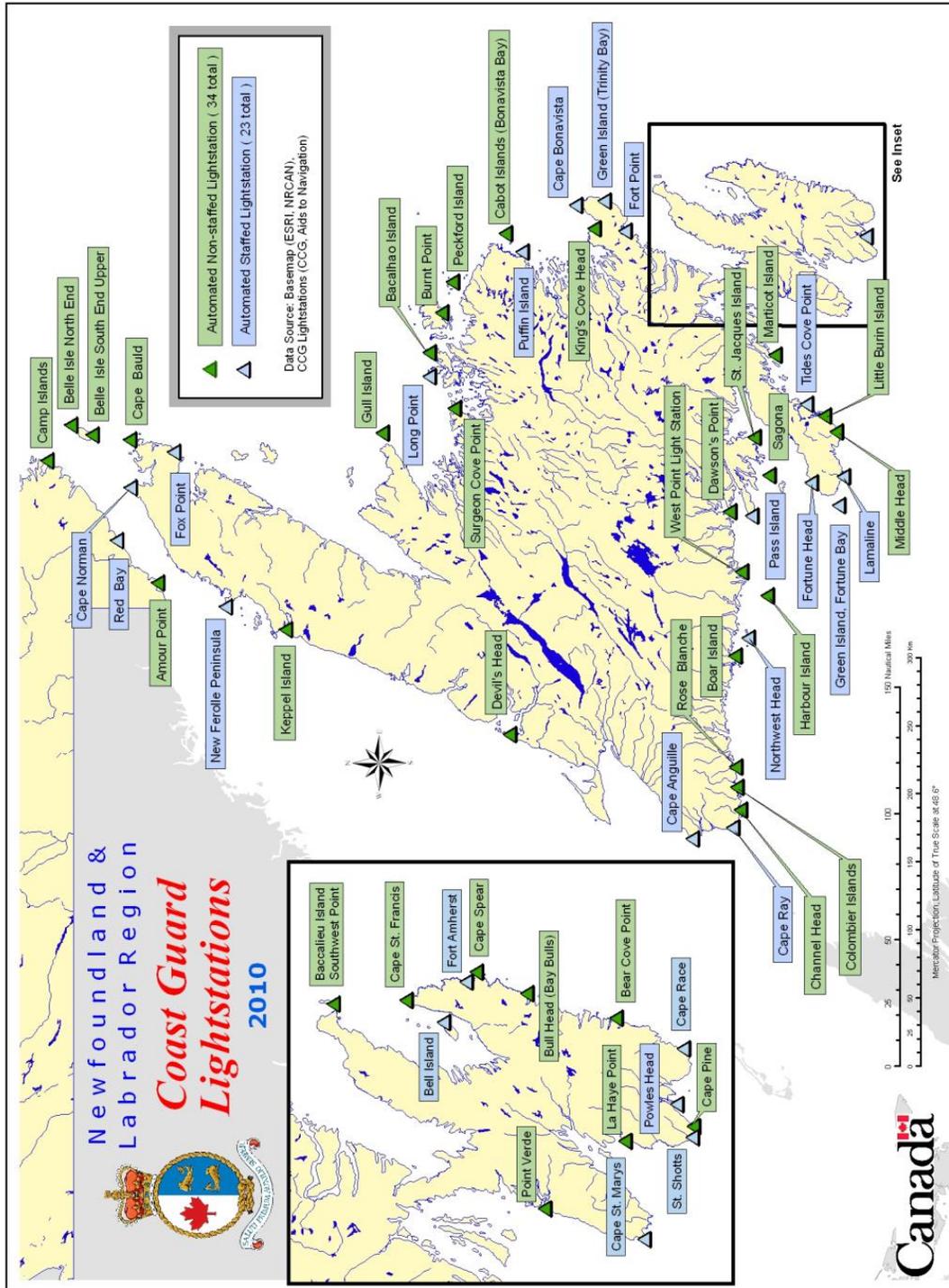
MAP OF LIGHTSTATIONS IN THE PACIFIC REGION



Source: CCG, April 2010.

APPENDIX 3

MAP OF AUTOMATED LIGHTSTATIONS, NEWFOUNDLAND AND LABRADOR REGION



Source: CCG, April 2010.

## APPENDIX 4

SELECTED CHARACTERISTICS OF STAFFED LIGHTSTATIONS,  
PACIFIC REGION

<b>Lightstation</b>	<b>Automated</b>	<b>Remote</b>	<b>Positions</b>	<b>Staffing</b>	<b>Provision of meteorological information (See note below)</b>
Addenbroke Island	Yes	Yes	2	Permanent residents	(1)
Boat Bluff	No	Yes	2	Permanent residents	(1)
Bonilla Island	No	Yes	2	Permanent residents	(1)
Cape Beale	No	Yes	2	Permanent residents	(2)
Cape Mudge	Yes	No	1	Single keeper	(1)
Cape Scott	No	Yes	2	Permanent residents	(1)
Carmanah Point	No	Yes	2	Permanent residents	(2)
Chatham Point	No	No	2	Permanent residents	(1)
Chrome Island	Yes	Yes	2	Permanent residents	(2)
Dryad Point	Yes	Yes	2	Permanent residents	(1)
Egg Island	No	Yes	2	Permanent residents	(1)
Entrance Island	Yes	Yes	2	Permanent residents	(2)
Estevan Point	No	Yes	2	Permanent residents	(2)
Green Island	Yes	Yes	2	Permanent residents	(1)
Ivory Island	No	Yes	2	Permanent residents	(1)
Langara Island	No	Yes	2	Permanent residents	(1)
Lennard Island	No	Yes	2	Permanent residents	(2)
McInnes Island	No	Yes	2	Permanent residents	(1)
Merry Island	No	Yes	2	Permanent residents	(1)
Nootka	No	Yes	2	Permanent residents	(1)
Pachena Point	Yes	Yes	2	Permanent residents	(2)
Pine Island	No	Yes	2	Permanent residents	(1)
Pulteney Point	No	No	1	Single keeper	(2)
Quatsino	No	Yes	2	Permanent residents	(1)
Scarlett Point	Yes	Yes	2	Permanent residents	(2)
Trial Island	Yes	Yes	2	Permanent residents	(2)
Triple Island	No	Yes	4	Rotational, 28 days	(1)

<b>Lightstation</b>	<b>Automated</b>	<b>Remote</b>	<b>Positions</b>	<b>Staffing</b>	<b>Provision of meteorological information (See note below)</b>
Total			54		

(1) Wind, waves, visibility, estimated cloud height and types, temperature and dew point.

(2) Wind, waves and visibility.

Source: CCG, April 2010.

## APPENDIX 5

**SELECTED CHARACTERISTICS OF STAFFED LIGHTSTATIONS,  
NEWFOUNDLAND AND LABRADOR REGION**

<b>Lightstation</b>	<b>Remote</b>	<b>Positions</b>	<b>Staffing</b>	<b>Provision of Meteorological Information</b>
Bell Island	No	2	Rotational 7 days	Ice conditions to local fishers
Cape Anguille	No	2	Rotational 14 days	No
Cape Bonavista	No	2	Rotational 28 days	Ice and sea conditions to local fishers
Cape Norman	No	3	Rotational 28 days	No
Cape Race	Yes	4	Rotational 28 days	At request of Environment Canada
Cape Ray	No	4	Rotational 14 days	No
Cape St. Mary's	No	1	Single keeper	No
Fort Amherst	No	4	Rotational 7 days	No
Fort Point	No	3	Rotational 14 days	Sea state and ice conditions to fishers and pleasure craft
Fortune Head	No	4	Rotational 28 days	Weather and sea state conditions to fishers and ferry boat captains
Fox Point	No	4	Rotational 14 days	No
Green Island Fortune Bay	Yes	4	Rotational 28 days	Sea state and weather conditions to fishers and ferry
Green Island Trinity Bay	Yes	4	Rotational 28 days	Weather and ice conditions to local fishers
Lamaline	No	3	Rotational 28 days	Weather and sea state to local fishers and pleasure craft
Long Point	No	4	Rotational 28 days	Weather, sea state and ice conditions to fishers
New Ferolle Peninsula	No	2	Rotational 28 days	No
Northwest Head	No	3	Rotational 14 days	Weather and sea state to fishers and pleasure craft
Pass Island	Yes	4	Rotational 28 days	Weather and sea state to fishers and pleasure craft
Powles Head	No	1	Single keeper	Weather and sea state to fishers
Puffin Island	Yes	4	Rotational 28 days	Weather, sea state and ice conditions to fishers

Red Bay	No	1	Single keeper	No
St. Shotts	No	2	Rotational 7 days	Weather and sea state to fishers
Tides Cove Point	No	4	Rotational 7 days	Weather and sea state to fishers
Total		69		

Source: CCG, April 2010.

**APPENDIX 6****SELECTED FACTS ON STAFFED LIGHTSTATIONS<sup>53</sup>****The Newfoundland and Labrador Region**

Eighteen of the 23 staffed stations in the Region can be reached by road. Five are in remote locations: Puffin Island, Green Island (Trinity Bay), Green Island (Fortune Bay), Pass Island, and Cape Race.

All 23 staffed lightstations are equipped with solarized equipment, most are powered by hydro, and several have wind turbines and solar power or a combination of the two. Three of the five remote sites have backup diesel power for the lightkeepers.

Three staffing/work systems operate in Newfoundland and Labrador:

- Three lightstations are on a single-keeper station system, which uses one lightkeeper who works a 56-hour week with no rotation. No staff are present at the lightstation outside these hours;
- At the five remote sites, a rotational system based on 28-day shifts is used. Two people per shift work 28 continuous days and are replaced by two new keepers for the next 28-day period. The system requires four lightkeepers per station. Because of remoteness, relief keepers are required to replace absent keepers;
- At the remaining 15 staffed sites, a rotational system based on a 7/14/28-day rotation is used. Staff work a day shift (eight hours) on rotation and go to their own homes in the community at the end of the day.

In 2005, under a Lightkeepers Transfer Project, a number of lightkeepers were relocated from remote stations to more accessible land-based stations where they could live in the community in their own accommodation.

In total, 20 of the 23 lightstations in the Region use staff who work shifts on rotation. At rotational sites, both keepers reside in the same government-furnished house for the duration of the rotation. At other sites, small office accommodation is provided. Helicopter services are used for keeper changes, maintenance, and to fly in fuel at remote stations.

The Coast Guard provides telephone and fax communication through the most appropriate of landline, cellular, and satellite service. There are land lines on 15 sites. Four land-based sites and five remote sites are equipped with cellular phones. Remote sites are provided with satellite

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<sup>53</sup> See also CCG, "Strategic Activity Expenditure Review, Marine Aids to Navigation, Fixed Aids – Staffed Lighthouses," March 2010.

service. All sites have a separate fax line. There is some computer access for the lightkeepers. Remote sites also use VHF radio communications.

### **The Pacific Region**

Of the 27 staffed lightstations in the Pacific Region, three are accessible by road (Cape Mudge, Chatham Point, and Pulteney Point), and 24 stations are accessible only by air or water for the movement of staff and resupply. Six of those 24 stations are accessible on foot by hiking trails (Cape Scott, Nootka, Estevan Point, Cape Beale, Pachena Point, and Carmanah Point). All six are on the west coast of Vancouver Island and are visited by tourists.

Some lightstations in the Region are connected to a hydro grid. The power requirements for stations differ, depending on whether they are staffed or unstaffed. Unstaffed lightstations require power only for the aid(s) to navigation. Where hydro is not available, solar power is sufficient. Hydro- or solar-powered aids have diesel generator backups. The three sites accessible by road are supplied with fuel by a commercial company. Of the other 24 staffed stations, 20 are refuelled by barge, two by hovercraft, and two by helicopter.

Staffed stations require power for the light and for resident families. Diesel-powered generators are required to meet resident keepers' power requirements.

At all staffed sites, staff reside on-site, seven days a week. Twenty-four lightstations are staffed by two permanent resident keepers (principal and assistant); whenever one of the staff has to leave, a relief is brought in. Two stations have a single keeper; both are accessible by road from a community. One station is staffed on a 28-day rotational system with two keepers on each rotation.

At 11 of the 27 staffed lightstations, the operation of lighthouses involves maintaining three residences – one each for the principal keeper, the assistant keeper, and the relief/work staff. All the other staffed stations have two residences (with the exception of Triple Island).

Communication from the stations is by VHF radio through Marine Communications and Traffic Services Centres. Keepers arrange and pay for their own satellite links (television and Internet). A few stations have land lines because BC Tel installed relay towers for its own purposes a number of years ago.

## WITNESS LIST

Tuesday, April 13, 2010	
<i>Fisheries and Oceans Canada</i>	Hon. Gail Shea, P.C., M.P., Minister of Fisheries and Oceans; George Da Pont, Commissioner, Canadian Coast Guard; Krishna Sahay, Director General, Real Property, Safety and Security.
Tuesday, April 20, 2010	
<i>Fisheries and Oceans Canada</i>	Ray Browne, Regional Director, Maritime Services, Newfoundland and Labrador Region, Canadian Coast Guard; George Da Pont, Commissioner, Canadian Coast Guard; Krishna Sahay, Director General, Real Property, Safety and Security; Susan Steele, Regional Director, Maritime Services, Pacific Region, Canadian Coast Guard.
Tuesday, April 27, 2010	
<i>Parks Canada</i>	Larry Ostola, Director General, National Historic Sites; Darlene Pearson, Director, Policy Branch, National Historic Sites; Norman Shields, Manager, Heritage Lighthouse Program, Policy Branch, National Historic Sites.
Tuesday, May 4, 2010	
<i>BC Lightkeepers</i>	The late Steve Bergh, President.
<i>Union of Canadian Transportation Employees</i>	Christine Collins, National President.
Tuesday, May 11, 2010	
<i>Nova Scotia Lighthouse Preservation Society</i>	Barry MacDonald, President.
Tuesday, June 8, 2010	
<i>As an individual</i>	John Duncan, M.P.
Tuesday, October 19, 2010	
<i>Heritage Canada Foundation</i>	Carolyn Quinn, Director of Communications; Chris Wiebe, Officer, Heritage Policy and Government Relations.

Tuesday, October 26, 2010	
<i>Environment Canada</i>	Michael Crowe, Director, Strategic Integration Division, Meteorological Service of Canada; Dave Wartman, Director, Atmospheric Monitoring, Meteorological Service of Canada.
Tuesday, November 23, 2010	
<i>Saturna Island Heritage Committee</i>	Richard Blagborne, President.
<i>Parks Canada</i>	Hon. Pat Carney (Former Senator) Chair, Consultative Group on Heritage Lighthouse Protection Act (HLLPA).
<i>Cove Island Lightstation Heritage Association</i>	Robert Square, Chair.
<i>NAV Canada</i>	Rudy Kellar, Vice President Operations; Jeff MacDonald, Director, Operations Planning and Programs.
Thursday, November 25, 2010	
<i>Transportation Safety Board of Canada</i>	Jean L. Laporte, Chief Operating Officer; Brian Lewis, Senior Marine Investigator.
<i>Transport Canada</i>	Donald Roussel, Director General, Marine Safety.
Tuesday, November 30, 2010	
<i>Strathcona Regional District</i>	Jim Abram, Director, Discovery Islands-Mainland Inlets.
<i>International Ship-Owners Alliance of Canada Inc.</i>	Kaity Arsoniadis-Stein, President and Secretary-General.

**FACT-FINDING****Nova Scotia****Monday, May 31, 2010 (Sydney)**

Lise Marchand, Executive Director, Canadian Coast Guard;  
 Louis Guimond, Director of Studies, Canadian Coast Guard;  
 Richard Slusarek, Nautical Sciences Instructor, Canadian Coast Guard;  
 Normand Lavigne, Nautical Sciences Instructor, Canadian Coast Guard;  
 Robert Perchard, Superintendent of Training, Marine Communications and Traffic Systems, Canadian Coast Guard;  
 Susan Steele, Regional Director, Maritime Services, Pacific Region, Canadian Coast Guard;  
 Matthew Elliot, Parliamentary Affairs Advisor, Fisheries and Oceans Canada.

Heather Ozon, Officer in Charge, Marine Communications and Traffic Systems, Canadian Coast Guard;  
 Donald MacKinnon, Officer, Marine Communications and Traffic Systems, Canadian Coast Guard;  
 Shawn Hudson, Officer, Marine Communications and Traffic Systems, Canadian Coast Guard.

Hamilton Carter, Retired fisherman;  
 Malcolm MacDonald, Fisherman;  
 Gordon MacDonald, Fisherman.

**Monday, May 31, 2010 (Louisbourg)**

Gerry Gartland, President, Louisbourg Lighthouse Heritage Society;  
 Jean Bagnell, Secretary-Treasurer, Louisbourg Lighthouse Heritage Society;  
 Carter Stevens, Member of the Executive, Louisbourg Lighthouse Heritage Society;  
 Allister MacDonald, Member of the Executive, Louisbourg Lighthouse Heritage Society.

Chip Bird, Cape Breton Field Unit Superintendent, Field Unit Office, Parks Canada.

Linda Kennedy, as an individual.

**Tuesday, June 1, 2010 (Louisbourg)**

Dave Smith, Superintendent, Marine Civil Infrastructure, Canadian Coast Guard;  
 Perry Rideout, Manager, Planning and Real Estate, Real Property, Safety and Security, Department of Fisheries and Oceans.

**Tuesday, June 1, 2010 (New Victoria)**

Jolene Mackenzie, Site Supervisor, Sydney Harbour Fortification Society;  
 Residents of the Low Point lightkeeper's house.

**Wednesday, June 2, 2010 (Halifax)**

Mark Rogers, Regional Representative, Public Service Alliance of Canada;  
 Cameron Mackenzie, Retired fisherman;  
 Robert Comeau, Services Canada;  
 Ashton Spinney, Fisherman.

**Thursday, June 3, 2010 (Dartmouth)**

Bill Belding, Client Service Officer, Aid to Navigation, Maritime Services, Canadian Coast Guard.

Norma Richardson, Eastern Fishermen's Federation;  
 Melanie Sonnenberg, Eastern Fishermen's Federation.

Darlene Grant Fiander, President, Tourism Industry Association of Nova Scotia;  
 Danny Morton, Chair, Tourism Industry Association of Nova Scotia.

**Newfoundland and Labrador****Monday, November 1, 2010 (Gander and Twillingate Region)**

Susan Steele, Regional Director, Maritime Services, Pacific Region, Canadian Coast Guard;  
 Ray Browne, Regional Director, Maritime Services, Newfoundland and Labrador Region, Canadian Coast Guard;  
 Paul Bowering, Superintendent, Aids to Navigation, Fisheries and Oceans Canada;  
 Suzanne Lalonde, Parliamentary Affairs Advisor, Fisheries and Oceans Canada.

Craig Burry, Lightkeeper, Puffin Island, Canadian Coast Guard;  
 Richard Miller, Lightkeeper, Puffin Island, Canadian Coast Guard.

Hayward Canning, Lightkeeper, Long Point Lighthouse, Canadian Coast Guard.

Fred Bridger, President, Twillingate Islands Tourism Association;  
 Michael Geiger, Vice-President, Twillingate Islands Tourism Association;  
 Pearl Geiger, Treasurer, Twillingate Islands Tourism Association.

John Hamlyn, Mayor, Town of Crow Head;  
 Ken Howell, Councillor, Town of Crow Head;  
 Allan Roberts, Former lightkeeper.

Gordon Noseworthy, Mayor, Town of Twillingate;  
 Jack Troake, Fisherman and sealer;  
 Cyril Dalley, Fisherman.

Tuesday, November 2, 2010 (Marystown Region)

Berkley Pierce, Lightkeeper, Green Island Lighthouse, Canadian Coast Guard;  
Carl Crewes, Lightkeeper, Green Island Lighthouse, Canadian Coast Guard.

Corin Durnford, Lightkeeper, Tides Cove Point, Canadian Coast Guard;  
Ralph Durnford, Lightkeeper, Tides Cove Point, Canadian Coast Guard.

Darrell Lafosse, Mayor, Town of Grand Bank;  
Elaine Strowbridge, Councilor, Town of Grand Bank;  
Stan Burt, Councilor, Town of Grand Bank;  
Wayne Bolt, Manager, Town of Grand Bank;  
Cathy Follett, Clerk, Town of Grand Bank;  
Robert Parsons, Chairperson, Grand Bank Development Corporation;  
Heather Burlingham, Grand Bank Development Corporation;  
Arch Evans, President, Grand Bank Harbour Authority;  
Frank Crewes, Chairperson, Grand Bank Heritage Society;  
Joyce Rogers, Treasurer, Grand Bank Heritage Society;  
Carol Anne Haley, Assistant, Office of Judy Foote, MP for Random-Burin-St. George's;  
Corey Parsons, Assistant, Office of the Hon. Darin King, MLA for Grand Bank.

Charles Dominaux, Captain, MV Arethusia;  
Gordon Price, Lightkeeper;  
Aubrey Wells, Fisherman;  
Paul Harris, Fisherman;  
Earl Mitchell, Boater;  
Jake Weymouth, Recreational boater;  
Michel Mahe, Recreational boater.

Wednesday, November 3, 2010 (Avalon Peninsula)

Ricky Myrick, Site owner, Cape Pine.

Clifford Durnford, Lightkeeper, Cape Race, Canadian Coast Guard;  
Francis Coombs, Lightkeeper, Cape Race, Canadian Coast Guard.

Charlene Power, Cape Race-PCS Heritage Inc. and Member of the Portugal Cove South Harbor Authority;  
Aiden McCarthy, Cape Race-PCS Heritage Inc.;  
Katherine Ward, Cape Race-PCS Heritage Inc.;  
Cynthia Power, Cape Race-PCS Heritage Inc.;  
Ida Perry, Cape Race-PCS Heritage Inc.;  
Guy Barnable, Cape Race-PCS Heritage Inc. and Irish Loop Group.

Thursday, November 4, 2010 (St. John's Area)

Brian Stone, Superintendent, Maritime Search and Rescue, Fisheries and Oceans Canada;  
Kevin Burns, Regional Supervisor, Marine Safety, Canadian Coast Guard.

Peter and Nicole Gill, Leaseholders of the property which surrounds the Fort Amherst Lighthouse.

Glenn Keough, Manager, Visitor Experience and National Historic Sites, Parks Canada;  
Jennifer Duff, Public Relations and Communication Officer, Parks Canada;  
Paula Morgan, Acting Visitor Experience Team Leader, Parks Canada.

Gerry Cantwell, Canadian Coast Guard Newfoundland Region Alumni Association Inc.;  
Jerry Duggan, Canadian Coast Guard Newfoundland Region Alumni Association Inc.;  
Leslie H. Noseworthy, Artist.

John Boland, Staff Representative, Fish, Food and Allied Workers;  
Dave Shaw, Organizer – Atlantic Region, Public Service Alliance of Canada.

Jim Miller, Marine Broker, TRINAV Marine Brokerage Inc.

Jim Wellman, Managing Editor, Navigator Magazine.

Jerry Dick, Director of Heritage, Department of Tourism, Culture & Recreation, Government of Newfoundland and Labrador;  
Ella Heneghan, Cultural Tourism Development Officer, Department of Tourism, Culture & Recreation, Government of Newfoundland and Labrador;  
David Bradley, Chair, Association of Heritage Industries Newfoundland and Labrador;  
Kim Shipp, Executive Director, Association of Heritage Industries Newfoundland and Labrador.

### **British Columbia**

Tuesday, November 16, 2010 (Victoria)

Vija Poruks, Assistant Commissioner, Canadian Coast Guard;  
Kevin Carrigan, Superintendent, Marine Navigation Services, Canadian Coast Guard;  
John Palliser, Superintendent, Marine SAR, Canadian Coast Guard;  
Susan Steele, Regional Director, Maritime Services, Pacific Region, Canadian Coast Guard;  
Jaspreet Rehal, Director, Integrated Business Management Services, Canadian Coast Guard;  
Suzanne Lalande, Parliamentary Affairs Advisor, Fisheries and Oceans Canada.

Bob Wilson, Lightkeeper, Carmanah Lightstation, Canadian Coast Guard;  
Jeff Cole, Lightkeeper, Carmanah Lightstation, Canadian Coast Guard.

Scott Fraser, MLA for Alberni-Pacific Rim;  
 Dave Thompson, Communications Officer for Scott Fraser, MLA;  
 Vicky Husband, as an individual;  
 Heather Fox, as an individual;  
 Michael Jackson, Director, South Island Sea Kayak Association;  
 Tim Parker, Pat Bay Air Services, Board Member, Floatplane Operators Association;  
 Len Shorkey, Pilot, Canadian Coast Guard;  
 Patrick Marshall, Volunteer, Ocean Industries BC;  
 Marie Vautier, Doctor, as an individual;  
 Matthew Fairbarns, as an individual;  
 Len Shorkey, Jr., as an individual;  
 Ana Simeon, Local Groups Coordinator, Sierra Club BC;  
 Caspar Davis, Director, Sierra Club Victoria Groups;  
 Robert Shaw, Member, Kludahk Outdoors Club;  
 Paul Whalen, Assistant Lightkeeper, Addenbroke Lightstation, Canadian Coast Guard;  
 Ernest Hooker, Electrical Foreman, Canadian Coast Guard;  
 Patrick Kelly, as an individual;  
 Angus Matthews, Executive Director, Shaw Ocean Discovery Centre;  
 Alexander Murdoch, Marine Consultant (retired), Local Marine Advisory Committee for South Vancouver Island;  
 Michael Fischer, as an individual;  
 Al Lubkowski, Owner, Blackfish Wilderness Expeditions;  
 Marion Cumming, Member, Heritage Oak Bay;  
 Chris Blondeau, Director of Operations, Pearson College;  
 Garry Fletcher, BC Parks Ecological Reserve Warden;  
 Ryan Murphy, Eco-Guardian and Resident Marine Scientist, Pearson College.

Wednesday, November 17, 2010 (Nanaimo)

Meridith Dickman, Principal Lightkeeper, Trial Island, Canadian Coast Guard.

Tony Greenall, Acting Principal Lightkeeper, Entrance Island, Canadian Coast Guard.

Kathy Doyle, as an individual;  
 Iain Colquhoun, as an individual;  
 Rirchard Goode, President, BC Ferry Marine Workers Union;  
 David Kattler, Deck Officers Representative, BC Ferry Marine Workers Union;  
 Joanne Tiglmann, Assistant Lightkeeper, Canadian Coast Guard;  
 Jean Floyd Buck, as an individual;  
 Trina Tiglmann, as an individual;

Blair Hedley, Navigator;  
 Jerry Etzkorn, Lightkeeper, Carmanah Point Lightstation, Canadian Coast Guard;  
 Janet Etzkorn, Lightkeeper, Carmanah Point Lightstation, Canadian Coast Guard;  
 Sheila Malcolmson, Chair, Islands Trust Council;  
 David Andrews, Director, Gabriola Museum;  
 Don Roberts, Fisherman (retired);  
 Bill Barsby, as an individual;  
 Toryn Barsby, as an individual;  
 William R. Mounce, Captain;  
 Steve Kinaman, Lightkeeper, Canadian Coast Guard;  
 David McCallum, Principal Race Officer, Van Isle 360° International Yacht Race;  
 Jane Saxton, as an individual;  
 Frances Cartwright, as an individual;  
 Michel Perreault, as an individual;  
 Nelson W. Eddy, President, Lighthouse Country Marine Rescue Society and member of the CCGA (Station 59, Deep Bay);  
 Jamie Molloy, Vice-President, Safety, Harbour Air, Representatives of the Floatplane Operators Association;  
 Ivan Bulic, Board Member, Canadian Lightkeepers Association;  
 David Boehm, Board Member, Canadian Lightkeepers Association;  
 Kevin Vautier, President, Nootka Sound Shellfish Ltd.;  
 Laura Hardacker, Nootka Sound Shellfish Ltd.;  
 Janice Richards, Sailor and Relief Lightkeeper, Canadian Coast Guard;  
 Ron Corbeil, Health, Safety and Environmental Coordinator, United Steelworkers - District 3.

Thursday, November 18, 2010 (Campbell River)

Claire Trevena, MLA for North Island;  
 Jim Abram, Director, Discovery Islands-Mainland Inlets, Strathcona Regional District;  
 Peter Booth, Sunkissed Lodge, Nootka Sound BC;  
 Donald Assu, Fisherman, Cape Mudge;  
 Patrick Assu, Fisherman, Cape Mudge  
 Dennis Johnson, Lightkeeper, Cape Mudge, Canadian Coast Guard.

George Nagel, Marine Electrician Specialist;  
 Joel Eilertsen, Owner, Air Cab, 703 West Coast Float Plane Association;  
 Rick Snowdon, President, Sea Kayak Guides Alliance of BC;  
 Miray Campbell, as an individual;  
 A. Carol Anderson, as an individual;  
 Jack East, Canadian Rail Workers Union;

Harry MacDonald, Chair, C. R. Guides Association;  
 Charlie Cornfield, Mayor, Campbell River;  
 Alice Woods, Lightkeeper, Canadian Coast Guard and Acting President, BC Lightkeepers Local 20232;  
 Robert Somerville, SARTeck;  
 Craig Anderson, Chair, Strathcona RD;  
 Rick Hackiner, as an individual;  
 Ross Campbell, Captain Mothership Adventures Inc.;  
 Brent Swain, as an individual;  
 Manfred Binger, Captain, Sailboat;  
 Brenda E. Leigh, Director, Oyster Bay-Buttle Lake Regional District;  
 Ken Collins, Manager, Rock Bay Camp Ground;  
 Patti Greenham, Mariner;  
 She Fabrizio, as an individual;  
 Anne Wilson, as an individual;  
 Farlyn Campbell, Skipper;  
 Jody Eriksson, as an individual;  
 Jake Etkorn, Marine Planner, Living Oceans Society;  
 Yvonne Etkorn, as an individual;  
 Jim Abram, Director, Discovery Islands-Mainland Inlets, Strathcona Regional District;  
 Brian Falconer, Marine Operations Coordinator, Raincoast Conservation Society;  
 Phil Wainwright, Director, Mount Waddington Regional District;  
 Fern Kornelsen, as an individual;  
 Claudia Lake, as an individual;  
 Anita Brochocka, as an individual;  
 Joanne Banks, Council of Canadian;  
 Richard Hugensen, as an individual;  
 Ann Hauer, Lightkeeper, Canadian Coast Guard;  
 Quentin Dodd, as an individual.

Friday, November 19, 2010 (Prince Rupert)

Harvey Bergen, Principal Lightkeeper, Bonilla Island, Canadian Coast Guard.

Richard Rose, Principal Lightkeeper, Triple Island, Canadian Coast Guard;  
 Robert Vedder, Assistant Lightkeeper, Triple Island, Canadian Coast Guard.

Serge Paré, Principal Lightkeeper, Green Island, Canadian Coast Guard;  
 Gary Guyet, Assistant Lightkeeper, Green Island, Canadian Coast Guard.

Saturday, November 20, 2010 (Prince Rupert)

James Bryant, Cultural Advisor, Lax Kw'alaams Band;  
 Eugene Bryant, Councilor, Lax Kw'alaams Band;  
 Gina Garon, Acting Mayor, City of Prince Rupert;  
 Sheila Gordon-Payne, Councilor, City of Prince Rupert;  
 Ken Cote, North Coast Pilot;  
 Kendall Smith, Commercial fisherman;  
 Peter Haugan, Commercial fisherman;  
 Renata Neftin, Relief Keeper, Canadian Coast Guard;  
 Dave Anderson, Commodore, North Coast Sailing Association;  
 Jim West, Coast Guard "Santa";  
 David Cook, former member of the city council;  
 Kathleen Larkin, as an individual;  
 Bruce MacDonald, President, Inland Air Charters, Representative of the Floatplane Operators Association;  
 Joy Thorkelson, Northern Representative for the United Fishermen and Allied Workers' Union (UFAWU-CAW);  
 Howard Gray, Mariner;  
 Cynthia Spilsted, Overwaitea Foods;  
 Carol Kulesha, Mayor, Village of Queen Charlotte;  
 Evan Putterill, Director, Skeena Queen Charlotte Regional District;  
 Karl Bergman, Skeena Queen Charlotte Regional District;  
 Bart Proctor, Boater and charter operator.

Saturday, November 20, 2010 (Richmond)

Pamela Goldsmith-Jones, Mayor, District of West Vancouver;  
 Norm Dyck, Past President, Council of BC Yacht Clubs;  
 Paul Stanley, President, Council of BC Yacht Clubs;  
 Lucinda Tooker, as an individual;  
 Anna Smith, Officer, Royal City Squadron;  
 Erik Skovgaard, Captain, Westcoast Work Boat Association;  
 Leona Skovgaard, as an individual;  
 John Naunt, as an individual;  
 Hans Elfert, as an individual;  
 Caitlin Birdsall, Program Coordinator, BC Cetacean Sightings Network, Vancouver Aquarium;  
 Roy Mulder, President, Marine Life Sanctuary Society;  
 Chris Harvey-Clarke, Professor, Zoology Department, University of British Columbia;  
 Lance Barrett-Lennard, Head, Cetacean Research Program, Vancouver Aquarium Marine

Science Centre and adj Professor, Zoology Department, University of British Columbia;  
Derek Trethewey, Okanagan Land Development Corporation;  
Courtney Anderson, Sutton Group - Seafair Realty;  
Stephen Brown, President, Chamber of Shipping of British Columbia;  
Norbert Brand, as an individual;  
Kathi Brand, as an individual;  
Kay Sinclair, Regional Executive Vice-President, BC, Public Service Alliance of Canada;  
Stephen Dunsmore, Regional Vice-President, BC, Union of Canadian Transportation Employees;  
Roger Boshier, Professor Emeritus, UBC, Marine Safety Researcher, and Chair of the Canadian Coast Guard Lower Mainland Advisory Council.