

Safety and BC Ferries

**A Follow-up Review
of the 2007 Report on Operational Safety at
British Columbia Ferry Services Inc.**

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Introduction

Operational safety at British Columbia Ferry Services Inc. (BC Ferries) refers to those practices that are intended to ensure the safety and protection of passengers, employees and property from danger arising from the operation of a vessel in the marine environment or from related operations within the terminal facilities. The risks faced by BC Ferries include:

- injury or death to persons and damage to property;
- legal liability to BC Ferries in the case of injury or death to persons or damage to property;
- damage to, or destruction of, a vessel or terminal; and
- loss of credibility and reputation resulting from a major operational safety incident.

BC Ferries is committed to providing safe, reliable and efficient marine transportation services. One of its core values is to ensure that the safety and security of customers and staff is a primary concern in all aspects of doing business.

In 2006 I was commissioned by BC Ferries to conduct an independent review of the company's safety policies, procedures and practices relating to the safety of its passengers and crew, including the prevention of injuries. The review assessed the extent of BC Ferries' compliance with applicable *Canada Shipping Act (CSA)* regulations, codes and standards and with the company's own Safety Management System.

The results of the review were reported in January 2007. The review concluded that, overall, the company is operating a safe coastal ferry transportation system. However, there were a number of areas identified in the report where safety and related administrative processes and procedures needed to be strengthened. The report included 41 recommendations for improvements. Upon receiving the report, the company stated its commitment to addressing each of those recommendations in a timely manner and its intention to have a similar review carried out in about five years time.

Purpose of the Follow-up Review

The purpose of this follow-up review is to assess the progress BC Ferries has made in implementing the recommendations made in the 2007 report and the extent to which the related actions have solved the issues raised. The review also examined internal monitoring processes and provides a general assessment of operational safety.

Scope

This follow-up review included an examination of:

- the current status of each individual recommendation to assess the extent to which the recommendation has been implemented;

- whether the action taken in respect to each issue raised has dealt with the issue completely, substantially, partially or whether there has been no action taken in dealing with the issue;
- the operational safety processes, including internal monitoring processes and related documentation;
- reports of special reviews undertaken from 2007 to date relating to the recommendations made; and
- other relevant information.

Review Procedures

This review was conducted in the fall of 2011 by me and professional staff under my direction.

Our work included:

- examining documents relevant to determining the extent to which the 2007 recommendations have been implemented;
- visiting operational regions and spending time on six BC Ferries vessels and at six of its terminals to observe how safety-related activities are being carried out;
- interviewing BC Ferries' directors, senior management, and operating staff - including superintendents, senior masters, masters, chief engineers, officers and crews on vessels, terminal directors, managers and terminal staff - and BC Ferries' Safety Management System (SMS) auditors.

Review Summary

British Columbia Ferry Services Inc. (BC Ferries) manages a large and complex ferry system – one that operates 35 vessels and 47 terminals on 25 routes along the coast of British Columbia. In the fiscal year ended March 31, 2011 the system carried 20.7 million passengers and 8.1 million vehicles on more than 185,000 sailings.

We have concluded from our follow-up review that the company continues to operate a safe coastal ferry transportation system. There has been, since our 2007 report, a significant improvement in the safety culture and practices within the company. The company directors, management and staff have demonstrated their commitment to safety being number one both for the travelling public and for BC Ferries personnel.

We found that awareness about, and actions taken in regard to, safety have increased substantially since we carried out our last review. Considering that many of our recommendations were of a complex nature and necessarily would take a considerable time to implement, the progress to date made by the company in respect of the recommendations is highly commendable. Of our 41 recommendations, 28 have been fully or substantially implemented, 12 partially implemented and there is one where no action has been taken. The status of the individual recommendations can be found in Section 9 of this report: Summary of the Status of the 2007 Report Recommendations.

Operational Safety Objectives

In our previous report we noted that BC Ferries' long-term strategic objective of operational safety was not stated as a separate goal in the company's business plans. The corporate strategic and business plans now include strategic objective/goals that pertain directly to the safety and security of customers and employees, and applicable tactics, measures and targets have been developed in regard to the achievement of those objective/goals. As well, the company has undertaken various steps to reinforce that operational safety is the company's number one priority, and that at no time should any other company objective have a greater priority.

Commitment to Operational Safety

In our previous review we found a high level of commitment to operational safety throughout the organization. However, we noted that support for the Safety Management System was not practiced uniformly across the organization and not all senior operating staff had "bought into" the SMS. To achieve improvements in operational safety and the SMS, we believed BC Ferries needed to: carry out a comprehensive review of the SMS to determine areas where improvements to its implementation could be made; strive to establish an organizational culture that is fully supportive, open, empowering and receptive; and work cooperatively with the BC Ferry and Marine Workers' Union to improve safety and promote employee support for the SMS.

We found from our follow-up review that the company has carried out a comprehensive review of the Safety Management System and determined which areas are functioning effectively and which areas need improvement. Action plans for making the required improvements have been developed, with some having already been implemented and others still in the process of being implemented.

eFleet Electronic Documentation System

To improve the overall effectiveness of the SMS, the company has started to review and revise all manuals to avoid duplication and to introduce a user-friendly electronic documentation system. It has developed the new eFleet system that provides electronic documentation that can be updated through a simple on-line editing and approval process and easily accessed and searched by employees on the intranet or local computers onboard vessels. Information in eFleet is centrally located and is functionally organized into three levels of operational policy and procedures, replacing the old Fleet Regulations and other manuals. At the time of our review, seven vessel and all terminal manuals had been completed and uploaded into eFleet. The target date for having all of them completed and uploaded is March 2012.

Our interviewees indicated that the new eFleet system will significantly improve access to accurate and up-to-date safety critical information at locations where the system has been implemented.

The relationship between the union and management

An area that in 2007 we believed was critical to achieving safety improvements was improving the relationship between the union and management. In the conduct of the follow-up review, we were pleased to note that the parties have fully embraced our recommendation in this regard and have taken many steps to improve the relationship. The most significant of those was initiating and implementing the SailSafe program jointly as full partners. In our interviews with staff we found general agreement that the relationship between management and the union has improved significantly. Staff believes that there is now mutual respect, and much better communication, cooperation, openness and trust between the parties.

As a result of these activities, as well as others noted elsewhere in this report, the organizational safety culture of BC Ferries has improved significantly.

Identification and Management of Operational Safety Risks

We noted in our previous review that BC Ferries has recognized the importance of managing risk in the organization; however, there was no formal risk identification and assessment process in place fleet-wide, and risk management was not formally integrated into the SMS.

We found from our follow up review that the company has taken a comprehensive review of risk management and initiated a number of activities to strengthen it throughout the organization at all levels. A new Operational Risk Management Policy has been developed which forms the backbone of the company's restructured SMS and utilizes a range of integrated tools in order to manage operational risk. As a result there is a much higher awareness of the importance of identifying and managing risks.

Employee engagement in risk assessment was generated through the creation of trained local risk assessment teams at each vessel and terminal. A structured process for managing and communicating operational risks, the BC Ferries Operational Risk Register, has been designed and successfully piloted. The register is an excellent knowledge management tool that integrates a series of individual risk registers from each BC Ferries work site into a single collaborative repository. Full implementation of the risk register is in progress.

In order to support the broadest possible application of the principles of risk management, three levels of risk management training have been created. These levels include: basic risk awareness training for all employees, risk management training for selected managers and supervisors, and risk facilitation training for a smaller group of employees who will serve as 'in house' risk management subject matter experts.

The All Learning Events Reported Today handbook

An excellent tool that the company has developed to help with risk management is the All Learning Events Reported Today (ALERT) handbook which is available to all staff and is used to identify a hazard or situation which could cause injury or harm to a

person, damage to equipment, or damage to the environment. It has proven to be very effective in fully engaging staff at all levels in improving the operational safety process.

On-time performance

In our 2007 report we noted it was important that BC Ferries communicate to staff that, in making decisions around on-time performance, they must never compromise SMS requirements. At that time, on-time performance was linked to a management bonus plan and some staff believed that, as a result, on-time performance could impact on operational safety. In the follow-up review we found that the bonus plan for senior masters, masters and terminal directors and managers is no longer linked to on-time performance. Most of the employees interviewed indicated that they felt that on-time performance is no longer an issue. Interestingly, when we reviewed the on-time performance results since our 2007 report was issued, we noted that it has improved from 85.2% in 2005/6 to 89.1% in 2010/11.

Risk relating to vessels passing through Active Pass

In our 2007 report we observed that there was an increase in safety risk in respect of the maneuvering and timing required when two large vessels pass in opposite directions through Active Pass and recommended that BC Ferries undertake an assessment of the degree of risk associated with this situation. BC Ferries subsequently commissioned a comprehensive risk assessment study of this issue and, based on the conclusions and recommendations in that review, it has taken steps to implement the recommendations made and now feels that the risk is appropriately managed in this area.

Shift handover

Shift handover is the process by which one operational group passes responsibility for an organizational function to another. In the 2007 report, we observed the handover process from watch to watch with BC Ferries was extremely limited on most of the routes examined. Tight scheduling and the desire to minimize overtime limited the amount of face-to-face interaction among deck officers, supervisors, and crews at crew changes. These factors, in our view, limited the effectiveness of the handover process by reducing time available for discussions about operational safety issues. We recommended that BC Ferries review handover procedures and take appropriate action to ensure that consistent and proper watch handover occurs across the fleet.

BC Ferries has undertaken such a review; however, at the time of our follow-up the review was still in progress. This is an area that still needs to be dealt with.

The new Operations and Security Centre

Since our last review BC Ferries has established the Operations and Security Centre. The Centre provides: enhanced situational awareness and assessment for operations; ongoing security monitoring at all terminals and ships; incident response facilitation; and

support for day-to-day operations and incident management. The Centre has had a significant positive impact on operational safety in the company.

Incident reporting and investigation

We found that safety incidents are reported on a timely basis and that incidents are investigated as required. As well, operational safety deficiencies noted by internal and external audit and inspection processes are recorded in the Corporate Incident Management System which keeps track of follow-up actions taken. The Operations Safety Log that summarizes all of the deficiencies requiring follow-up and closure is reviewed by senior management and monitored by the Designated Person on an ongoing basis. A summary of the log is also regularly presented to the Safety, Health, Environment and Security Committee of the Board of Directors for review.

Staffing Vessels and Terminals with Qualified Employees

BC Ferries continues to staff its terminals and vessels with qualified personnel who meet the regulatory requirements of the Canada Shipping Act. The crew scheduling process has been strengthened, as we have recommended, by improving the input of personnel information and program controls to ensure that staff are not assigned to positions for which they are not qualified.

In our 2007 report we noted that there remained an unfilled training and orientation need for some staff, particularly staff hired to meet seasonal operating requirements. To deal with this issue, BC Ferries has reviewed the whole program and made substantial changes to how the program is structured and how training is provided to its staff. These changes include development of new courses, providing more training opportunities to staff, implementing the new Standard Education and Assessment program, developing in-house trainers to increase the capacity to provide more training, placing more focus on job specific training, providing more on-line training and self study to staff and establishing the Training Academy. Staff that we interviewed told us that training has improved substantially since our last review. However, an issue raised where improvements could be made is in how refresher training is managed. This area needs to be reviewed and the responsibilities for providing this training clarified, as well as what training should be provided in what areas and how, and who should provide the training.

In our 2007 report we noted that BC Ferries could provide increased training in bridge resource management and crowd management and control. In our current review we noted substantial improvement in both areas.

Bridge Resource Management

BC Ferries has recognized the importance of Bridge Resource Management (BRM) and has set out the various actions to improve consistency in application and understanding of BRM throughout the fleet. There has been a considerable increase in the refresher training provided to deck officers. The number of staff trained has increased substantially each year 2005 to 2009. In 2009, the bulk of the target audience training

was completed and from then on the focus has been on ensuring that new hires are provided with the training.

To further improve the training provided to deck officers, the company is in the process of implementing its new Bridge Team Simulation project. The vision of this project is the development and delivery of world-class deck officer technical and team training that is locally accessible, integrated within the company's normal operating cycles, and targeted to meet the needs the bridge teams. To date, three permanent simulator training units have been set up with appropriate software that includes a simulation database and ships' hydrodynamic models for 13 ship classes. The program will deliver targeted training from September to the end of May each year and will support the training requirements as they evolve.

Our interviewees confirmed that there have been great improvements in Bridge Resource Management since our last review as a result of the actions taken by the company. They noted better team work on the bridge, better training provided to deck teams, more sharing of information and back up, and better communication on the bridge.

Crowd management and control training

We have also noted that BC Ferries has put greater emphasis on crowd management and control training and has provided such training to all deck and catering staff meeting the Transport Canada requirement for Passenger Safety Management training. The company has in fact exceeded that requirement by continuing to offer this training to crews working on Sheltered Waters routes, which is not a requirement of Transport Canada.

The Training Academy

At the time of our previous review, BC Ferries was in the process of developing a Training Academy designed to meet its training needs and requirements. The Academy has now been developed and is fully functional. It is described as being both virtual and physical, and is intended to create, sustain and resource a learning culture that builds on the company's current training infrastructure while also introducing new best practices. A website has been set up which is the virtual segment of the Academy, and is a learning resource centre. It provides the access point for developing and coordinating an individual employee's personal learning plan. From a physical perspective, three modern classrooms have been added to the suite of training resources. The Academy is a good instrument to further improve training in the company.

The familiarization process

In our 2007 review we also noted that BC Ferries would benefit from reviewing its familiarization process, ensuring that it is carried out uniformly across the organization, and that documented information provided in the familiarization process is standardized to the extent practicable. BC Ferries recognized that its familiarization process could be

improved and subsequently undertook a thorough review to determine what improvements should be made. As a result it developed the Standard Education and Assessment (SEA) program which will replace the traditional familiarization process. It establishes a standardized and consistent education and clearance process across all terminal and vessel positions at BC Ferries with consistent documentation tools. Since its introduction in 2009, the program has been implemented for deck and terminal positions, and implementation for all positions is expected to be completed by the end of fiscal year 2015/16. All of the staff we interviewed were of the view that SEA is an excellent program and greatly improves the familiarization process throughout the organization.

Monitoring and Auditing of Safety Policies and Practices

BC Ferries uses a number of internal and external processes to monitor the extent to which company safety policies and procedures are carried out.

Internal processes include regular audits carried out by BC Ferries' internal Safety Management System (SMS) Verification Audit Group, inspections by superintendents of operations and terminal directors and managers in their regions, and a general overview by the Executive Director, Safety and Security. In general, we found in our 2007 report that these processes were being carried out as required, but noted that some areas required both the internal safety audit function and the inspections by superintendents, and terminal directors and managers to be strengthened. In our follow-up review we noted significant improvement in these areas.

Transport Canada carries out annual inspections and certifications, directly or through its delegated classification societies, of vessels when they are in operation and at their annual refit. The focus of the inspections is the safety of vessels and the certification and qualifications of ships' crews. Each of BC Ferries' vessels currently in operation have a Safety Inspection Certificate. At the end of November 2011, Transport Canada had 49 Safety Inspection documents citing deficiencies that required action by BC Ferries. None of these, however, compromises the safe operation of any vessel or was overdue for remediation.

The external audits are carried out to ensure that BC Ferries remains in compliance with all provisions of the International Safety Management Code. After successful completion of the audits, a Document of Compliance is issued for shore management processes and a Safety Management Certificate is issued for each vessel. BC Ferries currently has a Document of Compliance and Safety Management Certificate for each vessel. As at the end of November 2011, there were 11 non-conformities that required action, none of which were overdue for remediation.

Fire and boat drills

BC Ferries is required to undertake a comprehensive program of emergency fire and boat drills. In our 2007 report we noted that fire and boat drills were carried out as required. However, we noted that there was a need to ensure that all operational personnel who have not participated in recent fire and boat drills be included on a

regular basis. As well, the company would benefit from instituting a process of monitoring and evaluating fire and boat drills system-wide to ensure uniformity and standardization of crew skills and proficiency throughout the fleet.

In our follow-up review we noted that BC Ferries has started a comprehensive review of operational safety which has resulted in many recommendations and action plans for improvements. One of these recommendations focused on how drills should be improved and an action plan for making these improvements was developed. The action plan recommended various measures to improve the conduct and effectiveness of drills on vessels and terminals. It emphasized the importance of ensuring that drills are carried out as if there were an actual emergency, of ensuring full compliance with applicable regulations, and of ensuring that sufficient time is provided to run complete fire and boat drills.

Also recommended was the creation of a team to deal with issues such as participation of casual staff in drills and ship-shore drills, exploring the possibilities of 'peer training' among drill leaders, using in-house staff to deliver the type of training provided by external groups and creating generic drill scenarios that can become the basis of ship-specific emergency scenarios over time. It also suggested utilizing passengers in drill scenarios and instituting a process to monitor and evaluate fire and boat drills system-wide to ensure uniformity and standardization of crew skills and proficiency.

In our follow-up review, we noted that our recommendations have only been partially implemented and much work remains to be done until the necessary improvements have been made in this area.

Having the Right Emergency Equipment

Having appropriate emergency equipment, properly maintained, is essential in ensuring that the equipment functions as required in an emergency. In our 2007 report we noted that the quality of maintenance of emergency equipment at terminals and on vessels was "good" to "excellent." In our follow-up review, people we interviewed again confirmed that the equipment continues to be very good, in some cases even better than at the time of the last review, and is well maintained.

Reporting on Performance

The Safety, Health, Environment and Security Committee of the Board of Directors provides governance oversight concerning the safety, health, environmental and security operations of BC Ferries. As we found in our last review, the Board continues to be provided with regular reports on committee proceedings, and with important safety issues which are discussed in detail by the Board.

BC Ferries and the BC Ferry Authority issue a combined annual report that includes information about achievements relating to each of the operational goals set out in BC Ferries' one-year business plan. We recommended in our 2007 report that the company ensure that the annual report include specific information on the extent to which it has achieved its operational safety objectives.

In our follow-up review we found that, while there is some useful information in the BC Ferries annual report regarding the company's safety goals and programs, such information is not aligned with the strategies, tactics and performance measures set out in the company's annual business plan. Accordingly, it remains difficult for the general public and corporate stakeholders to determine from the annual report whether or not BC Ferries has been successful in meeting its annual operational safety objectives, initiatives and performance targets.

1 Background

1.1 The Company and Its Structure

BC Ferries was incorporated in April 2003 under the provincial Company Act. Ownership of the single-issued voting share is held by the BC Ferry Authority (BCFA), a non-share capital corporation established under the provincial Coastal Ferry Act (British Columbia). The provincial government of British Columbia is the holder of all of the preferred shares of BC Ferries, but has no voting interest in either the BCFA or BC Ferries.

BC Ferries has four wholly owned subsidiaries: Pacific Marine Leasing Inc.; BCF Captive Insurance Company Ltd.; Pacific Marine Ventures Inc.; and BC Global Services Inc. These subsidiaries have not been included in our follow-up review.

The appointment process and the composition of the Board of Directors of the BCFA is set out in the Coastal Ferry Act. The Board of Directors of BC Ferries, appointed by the BCFA, consists of 9 members.

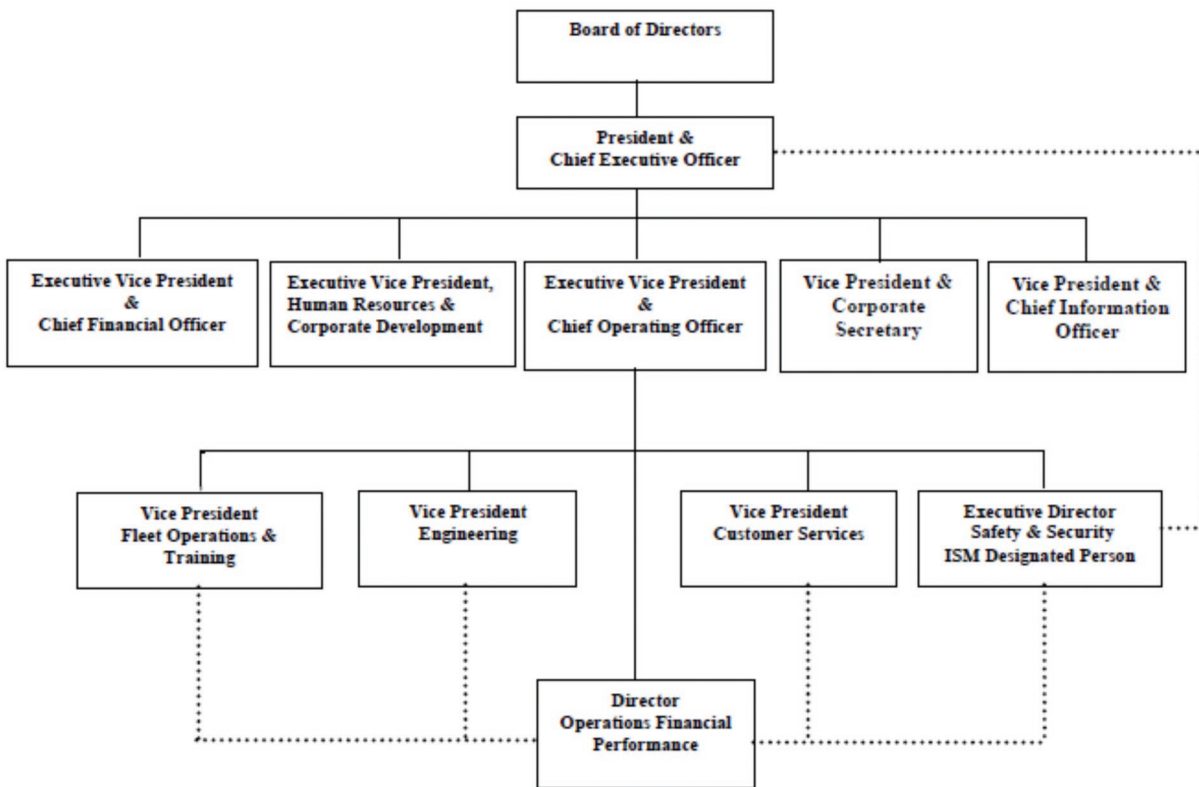
The Office of the British Columbia Ferries Commissioner, established under the provisions of the Coastal Ferry Act, regulates price caps for designated ferry route groups, any service reductions, discontinuance of routes, and certain other matters.

Organization Chart

The organizational structure of BC Ferries senior management is shown in Exhibit 1. The organization of the Operational Safety area is discussed in more detail in section 1.3 of this report, "Commitment to Operational Safety." The President and Chief Executive Officer (CEO), reporting to the Board of Directors, is ultimately responsible for the effective functioning of the organization. Reporting to the CEO is the Chief Operating Officer, who oversees the four areas of BC Ferries' operations: Fleet Operations and Training; Engineering; Customer Services; and Safety and Security. Together these areas are responsible for the proper implementation and functioning of the Safety Management System.

On December 6, 2011 the company announced that the position of Chief Operating Officer is to be eliminated as of December 31, 2011.

Exhibit 1: Organization Chart of BC Ferries Senior Management



1.2 Operational Overview

BC Ferries operates a large and complex ferry transportation system under a long-term services contract with the Province of British Columbia. The system provides year-round vehicle and passenger transportation and related services to communities along the coastal waters of British Columbia. The company operates 35 vessels and 47 terminals on 25 routes, and manages seven other remote routes through contracts with independent operators. During the 2010/11 fiscal year, BC Ferries carried more than 20.7 million passengers and 8.1 million vehicles on more than 185,000 sailings. The service area stretches along the coast of British Columbia from Prince Rupert in the north to Victoria in the south, with routes classified in three categories:

- major routes – connecting Vancouver Island to the Lower Mainland of British Columbia through five major terminals: Tsawwassen, Swartz Bay, Horseshoe Bay, Duke Point and Departure Bay;
- northern routes – providing service to the Province's mid and north coast and Haida Gwaii (formerly Queen Charlotte Islands); and
- other routes – consisting primarily of routes that connect the Gulf Islands and several other small communities to either Vancouver Island or the Lower Mainland.

BC Ferries' operations are divided into five regions: Southern Islands; Northern Islands; North Coast; Central Coast; and South Coast. Exhibit 2 illustrates the routes covered in those regions.

During the fiscal year ended March 31, 2011, BC Ferries had revenues of \$ 739 million, expenses of \$672 million, earnings from operations of \$67 million and net income of \$4 million. At March 31, 2011 it had total assets of \$1,858 million, liabilities of \$1,549 million, and shareholders' equity of \$309 million.

In 2006 BC Ferries embarked on a major capital improvement program with significant capital expenditures at an estimated cost of \$1.2 billion relating to new vessel acquisition, vessel upgrades and component replacement, terminal improvements and other projects.

BC Ferries has entered into two key contracts with the government of British Columbia relating to its provision of ferry services:

- a Coastal Ferry Services Contract, which has a 60-year term that began April 1, 2003. It sets out the core ferry transportation services that BC Ferries must provide, and the service fees payable by the Province for such services. The fees are fixed over the first performance term of the contract, which ends March 31, 2012.
- a Master Agreement, under which BC Ferries has leased ferry terminal properties for a 60-year term that began in April 2003. Under this agreement, BC Ferries has been granted exclusive rights and obligations to use and develop those properties.

Vessels

BC Ferries' fleet consists of 35 vessels, with an average age of 30 years. These vessels differ significantly in size, characteristics and class (Exhibit 3). Vessel capacity ranges

from 137 to 2,100 passengers and crew and from 16 to 470 automobile-equivalent units.

BC Ferries has implemented an asset management strategy to monitor and analyze the lifecycle and related costs of its assets, including vessels and terminals, on an ongoing basis. All vessels are to be maintained to the standards regulated by Transport Canada, classification societies and other regulatory agencies.

Terminals

BC Ferries operates five major and 38 minor terminals under 60-year leases that began in April 2003, as well as four other minor terminals under differing lease arrangements. The major terminals are: Tsawwassen; Swartz Bay; Horseshoe Bay; Duke Point; and Departure Bay.

Human Resources

BC Ferries has approximately 3,100 full-time employees. This is supplemented by up to 1,100 casual and seasonal staff that is hired to deal with the increased work load during the summer and at other times of the year when the demand for service increases.

Exhibit 2: BC Ferries' Routes



Exhibit 3

BC Ferries' Fleet

MAJOR VESSELS PASSENGERS 450-2,052 | CREW 21-48 | AUTOMOBILE EQUIVALENTS 286-470



Spirit of British Columbia 1993



Spirit of Vancouver Island 1994



Coastal Renaissance 2007



Queen of Alberni 1976



Queen of Coquitlam 1976



Queen of Cowichan 1976



Coastal Inspiration June 2008



Queen of New Westminster 1964



Queen of Oak Bay 1981



Coastal Celebration fall 2008



Queen of Surrey 1981

INTERMEDIATE AND SMALL VESSELS PASSENGERS 133-977 | CREW 4-35 | AUTOMOBILE EQUIVALENTS 16-192



Queen of Burnaby 1965



Queen of Nanaimo 1964



Island Sky fall 2008



Skeena Queen 1996



Queen of Cumberland 1992



Queen of Capilano 1991



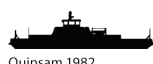
Mayne Queen 1965



Bowen Queen 1965



Powell River Queen 1965



Quinsam 1982



Quinitsa 1977



Kuper 2006



Klitsa 1972



Kahloke 1973



Kwuna 1975



Howe Sound Queen 1964



Tachek 1969



North Island Princess 1958



Quadra Queen II 1969



Tenaka 1964



Nimpkish 1973

NORTHERN VESSELS PASSENGERS 374-504 | CREW 26-40 | AUTOMOBILE EQUIVALENTS 80-115



Northern Adventure 2004



Queen of Chilliwack 1978



Northern Expedition 2009

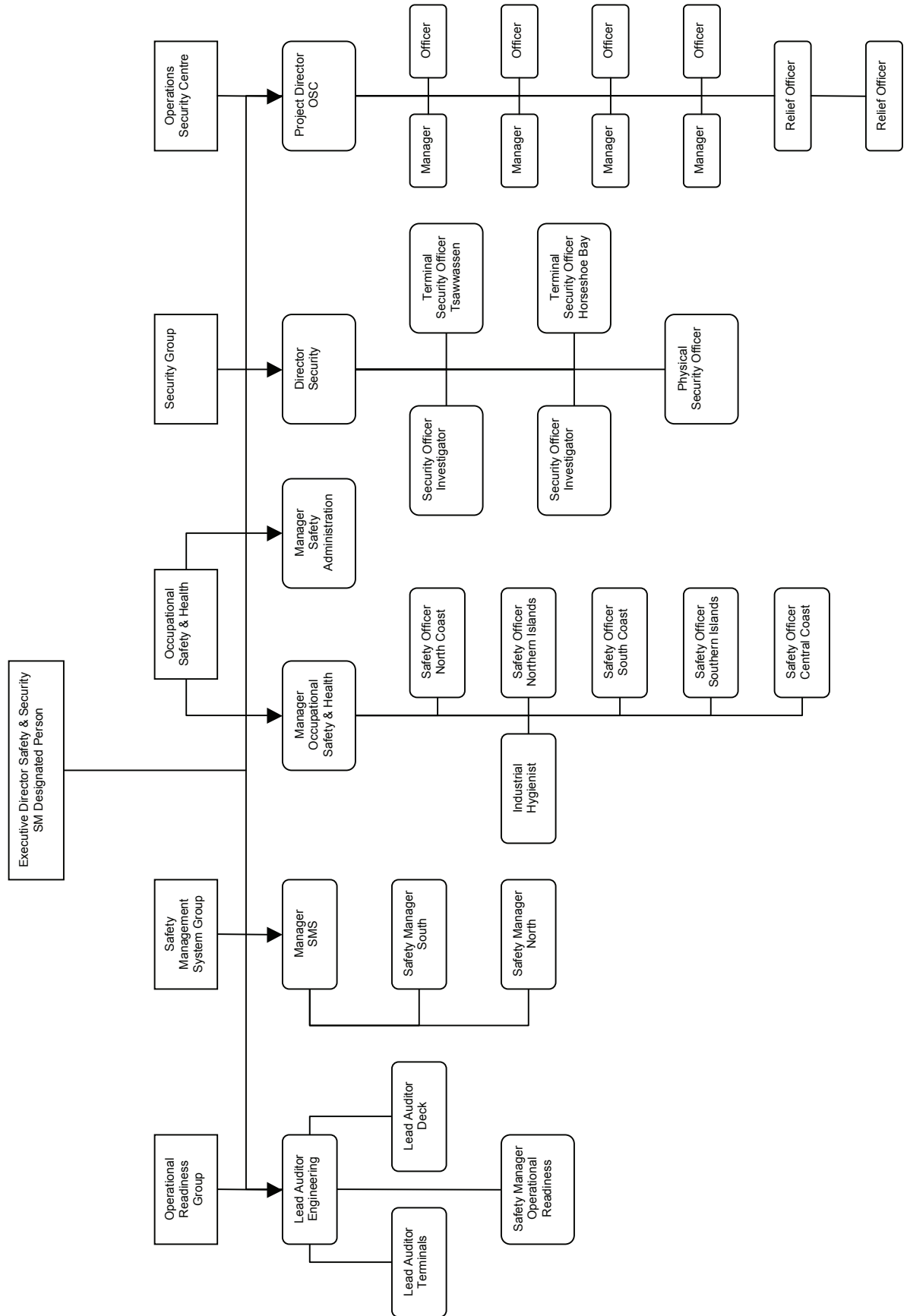
1.3 Organization of the Safety Function

To ensure that operational safety is properly integrated into BC Ferries operations, the company's organizational structure must clearly assign to particular staff the responsibilities for sound implementation and monitoring of the SMS.

BC Ferries has changed its organizational structure since our last review. Exhibit 4 shows the current organization of the safety function. Within the revised structure, a new position has been created: Executive Director, Safety and Security. This position is responsible for:

- providing more focus on safety;
- consolidating all safety and security-related areas;
- overseeing all audits, inspections and certifications; and
- monitoring other areas for the effective functioning of the SMS.

Exhibit 4: Organization Chart of BC Ferries' Safety and Security Department



1.4 Designated Person

According to the International Safety Management (ISM) requirements, a company must appoint a shore-based manager as the “Designated Person”. This person is the link between ship crew and shore management and must have both direct access to senior management and have sufficient resources and authority to carry out his or her responsibilities.

The function of the Designated Person is to:

- serve as a link between the shore management and the vessels in matters concerning safety and pollution prevention;
- oversee the monitoring of the safety and pollution prevention aspects of ship operations; and
- ensure that adequate resources and shore-based support are provided.

In addition, the Designated Person is to review the summary of audit findings and bring any concerns or persistent trends to the attention of the Executive Vice-President and Chief Operating Officer, Divisional Vice-Presidents and appropriate management personnel for action.

Where corrective action is not being implemented, the Designated Person is to investigate to determine the reason. Persons responsible for ensuring appropriate corrective action is taken are to notify the Designated Person when the corrective action has been completed. Where the lack of corrective action is persistent, the Designated Person is to notify the appropriate vice-president in BC Ferries.

As well, the Designated Person, in monitoring all VISORS reports, must advise the CEO of any concerns not satisfactorily addressed. The CEO is responsible for directing the appropriate vice-president to address the issue.

We believe that BC Ferries is complying with the requirements of the ISM Code by recognizing the importance of the position of the Designated Person and assigning appropriate duties to it. Although the Executive Director, Safety & Security, reports administratively to the Chief Operating Officer, he has a direct line of communication to the President and Chief Executive Officer. The Executive Director also reports to the Board of Directors and attends the quarterly meetings of the Board’s Safety, Health, Environment and Security Committee.

1.5 Internal SMS Verification Audit Group

An important element of the ISM Code is an internal audit group whose main purpose is to verify the compliance of operational safety activities against the documented requirements of the SMS.

BC Ferries has established an Internal SMS Verification Audit Group to evaluate compliance with:

- applicable components of the ISM Code;
- external regulatory requirements; and

- internal policies and procedures.

The group is staffed by three Lead Auditors - Engineering, Deck and Terminals - and a seamanship/life-saving Equipment Manager, who all report to the Designated Person. One of the group's duties is to audit sites that have a responsibility for operating and/or interfacing with vessels. Such audits are normally conducted annually, but the interval between audits may be extended for a further three months.

Where the auditors find non-conformity with the SMS, they issue a Corrective Action Request (CAR) form to the person responsible for the corrective action, along with an audit report that includes observations. A timeframe for taking the required action is set, and implementation of the corrective action is reviewed by the auditor at the next audit.

1.6 External ISM Audits

To ensure that BC Ferries remains in compliance with all provisions of the ISM Code, external audits are conducted by an independent organization authorized to issue a Document of Compliance. A Document of Compliance is issued to the company when it complies with the requirements of the ISM Code. A Safety Management Certificate is also issued to each vessel when its SMS meets the requirement of the ISM Code. This certificate attests that the vessel is being operated in compliance with the requirements of the ISM Code.

The Document of Compliance is issued every five years, with compliance verification audits conducted every 2.5 years.

When the auditors find areas where there is non-conformity with the ISM Code and the SMS, they issue Non-Conformity Notes and Observations, and set a time limit for corrective action. The Non-Conformity Notes are then followed up by BC Ferries' Internal SMS Verification Audit Group and the external ISM audit group to ensure that appropriate action has been taken.

1.7 Transport Canada Inspections

Transport Canada also plays a significant role in regulating and monitoring BC Ferries operations. It conducts annual and periodic inspections of the company's vessels and observes emergency drills carried out. Where the inspections identify deficiencies, a safety inspection document is issued. These deficiencies are then followed up by BC Ferries' management to ensure that appropriate action has been taken.

Since our last review the company has had 20 of its vessels placed under delegation to a recognized classification society that carries out all technical regulatory inspections on behalf of Transport Canada.

1.8 Customer Satisfaction Tracking

BC Ferries is also interested in obtaining information from its customers about operational safety. It carries out Customer Satisfaction Tracking studies which are

designed to track performance on satisfaction levels overall, as well as satisfaction levels with specific service attributes. The resulting satisfaction scores are published annually on the BC Ferries website. The survey also collects information about the overall safety of operations. The Customer Satisfaction rating for 2010 was 89%.

2 Operational Safety Objectives

In our 2007 report we noted that BC Ferries has made clear in all of its planning and reporting that the safety and security of its customers and employees is its first priority. Two of its performance goals were related to operational safety. However, the long-term strategic objective of ensuring a safe marine transportation system was not a separate goal within the company's business plans. We believed the company should have a strategic goal that pertains directly to that priority, with identified tactics, measures and targets related to achieving that goal.

We made the following two recommendations.

BC Ferries should:

- *ensure that each of the corporate strategic and business plans includes a strategic objective/goal that pertains directly to the safety and security of customers and employees, and that applicable tactics, measures and targets are developed in regard to the achievement of that objective/goal; and*
- *reinforce that operational safety is the company's number one priority, and that at no time should any other company objective take a higher level of priority.*

We found the following in our follow-up review:

Strategic and business plans

Each operating division within BC Ferries annually prepares a business plan and, collectively, those plans are then incorporated into a fiscal year corporate business plan in respect of the overall operations of the corporation.

For fiscal 2011/12, the Safety & Security Division developed a business plan that firstly sets out its vision and mission, then identifies eight relevant operational objectives. For each objective there are proposed initiatives and action plans ("tactics") to be carried out for the purpose of achieving the objective.

The 2011/12 corporate business plan sets out the BC Ferries mission: "to provide safe, reliable and efficient marine transportation services which consistently exceed the expectations of our customers, employees and communities, while creating enterprise value." There are five key business plan goals, with the first being the safety objective "to protect our customers and employees by continuously improving the safety of our operations, inclusive of vessels, terminals, and facilities". A number of safety strategies and tactics are listed, along with the statement that "at BC Ferries, the safety of our customers and employees is our top priority".

In respect of the stated safety objective, the corporation has established two long-term performance measures and, for each measure, a 2011/12 performance target:

- employee safety (employee injury frequency rate X severity rate divided by 1000); and
- passenger safety (number of passenger injuries per one million passengers).

The Board of Directors is regularly advised as to the degree to which each of the two safety objectives is being met, and an annual comparison of objectives to actual results is included in the business plan for the ensuing fiscal year.

Reinforcing that operational safety is the company's number one priority

Since the issuance of our report the company has undertaken many initiatives to reinforce that operational safety is the company's number one priority. In 2007 it started the SailSafe program to strengthen the safety culture in the organization and to implement the recommendation in the 2007 report. These included providing training at all levels of the organization, creating new tools and processes, such as identifying and reporting on risks, and improving communication overall about safety being number one. There is a great deal of communication about safety on an ongoing basis through bulletins, regular town hall meetings, newsletters, special notice boards and the company's website. Through all of these processes, safety being number one is always promoted.

In our interviews with persons at all levels of the organization, we found an overwhelming agreement that safety is the number one priority in the corporation. Staff generally told us that senior management is committed to safety, awareness of safety has increased substantially, everybody is involved with safety and safety is always discussed at events such as the five minute safety briefings at the start of each working shift, the Monday morning conference calls with the Chief Operating Officer, and at many other operational meetings.

The corporate strategic and business plans now include strategic objective/goals that pertain directly to the safety and security of customers and employees, and applicable tactics, measures and targets have been developed in regard to the achievement of each of those objective/goals. As well, the company has taken adequate steps to reinforce that operational safety is the company's number one priority, and that at no time should any other company objective have a greater priority.

Conclusion

Both of the above recommendations have been fully implemented.

3 Commitment to Operational Safety

In our 2007 report we noted that having full commitment to operational safety across the organization is an important element to achieving a high degree of operational safety. That commitment has to start at the top of the organization. Management has to ensure

that staff understand and buy into that commitment, and has to incorporate it in the activities and culture of the organization.

3.1 The Safety Management System (SMS)

BC Ferries voluntarily adopted the International Maritime Organization's International Safety Management (ISM) Code in 1994. The Code provides an international standard for the safe management and operation of ships and terminals, and for pollution prevention.

The ISM Code requires development and implementation of a safety management system and places responsibility for the safety of ships and the prevention of pollution within and throughout the company's management structure. This makes the whole organization responsible for safety, not just individual ship masters or shore-based managers.

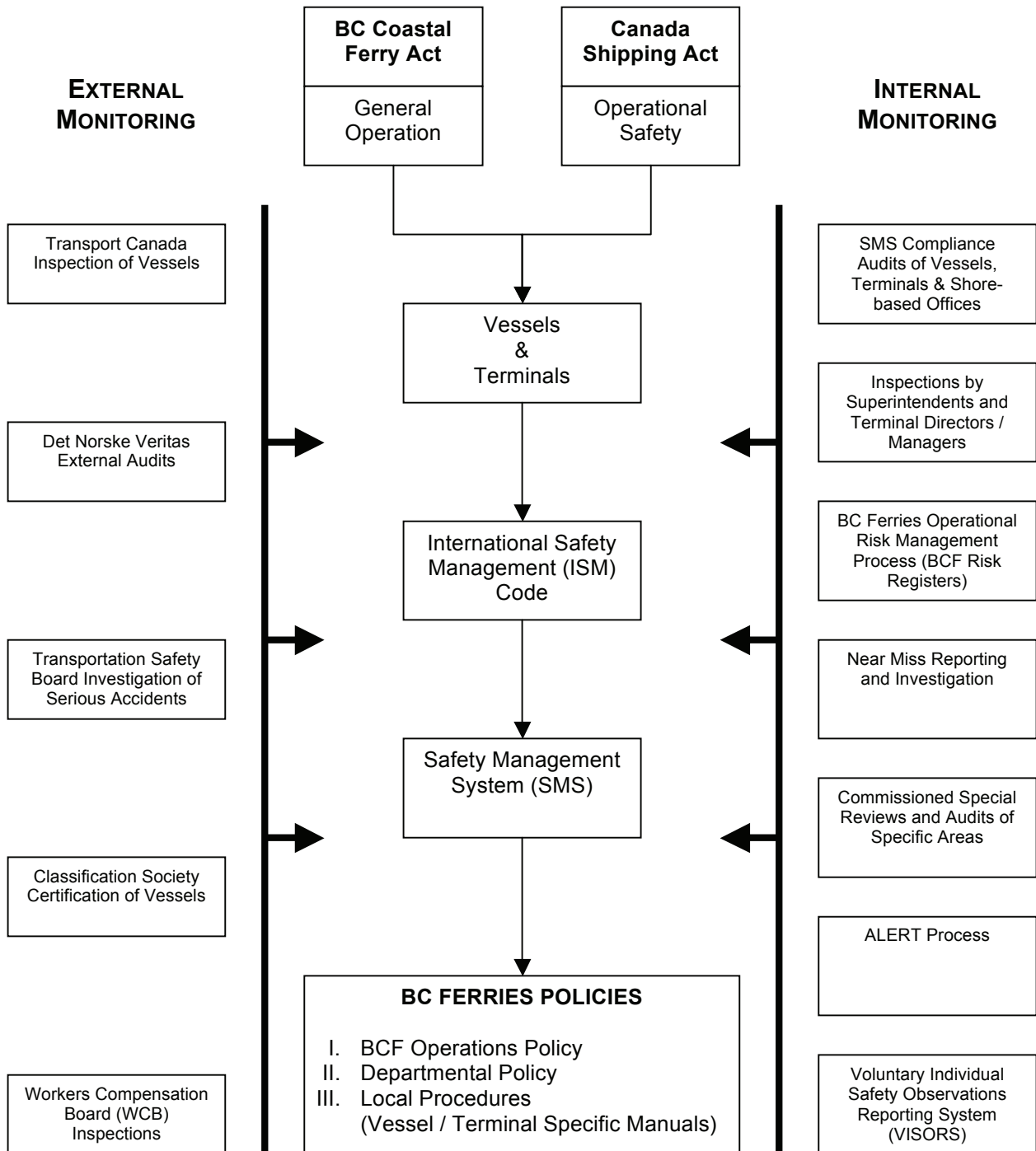
BC Ferries implemented a Safety Management System (SMS) in 1997. The objectives of the SMS are to:

- provide for safe practices in ship and terminal operations;
- provide a safe working environment;
- establish safeguards against all identified risks; and
- continuously improve safety management skills of employees, including preparing for emergencies related to safety and environmental protection.

The SMS takes into account the various codes, guidelines and standards of Transport Canada, federal and provincial environment ministries, the Workers' Compensation Board of British Columbia, classification societies and other industry organizations. The system also defines the responsibilities and authority of all employees and the interrelationships and lines of communications between and among the different BC Ferries departments.

Exhibit 5 provides an overview of BC Ferries' operations safety process.

Exhibit 5: Overview of BC Ferries' Operations Safety Process



In our 2007 report we noted that there was a high level of commitment to operational safety both by the Board of Directors and senior management. However, we found that not all operating staff believed that commitment to operational safety was practiced uniformly throughout the organization or that the level of buy-in to the SMS was as high as it should have been. There was a need by BC Ferries to focus more on ensuring that there was better buy-in to the SMS process throughout the organization. Without such commitment, the benefits of providing a consistent high level of safety would remain challenging. We also observed that there had not been a consistent effort in BC Ferries to promote the SMS since its inception in 1997, when there was a strong initial push for acceptance by employees. BC Ferries had not taken the necessary steps to ensure there was appropriate buy-in to the SMS as being fundamental to operational safety.

In addition, in 2007 we noted the following areas where improvements were needed:

Organizational Culture

In our assessment of the organizational culture of BC Ferries, we found that the vast majority of employees felt the company was supportive (empowering, open and receptive) or neutral. However, there were also a number who indicated it was punitive (controlling, closed and impervious). We believed the organizational culture was an issue that BC Ferries needed to consider in the context of the successful operation of its safety programs.

Consistency of application of the SMS in the organization

To ensure that its services were carried out at a consistently high level throughout the organization, BC Ferries needed to ensure that the SMS worked uniformly in all regions. We noted however, that there were still many areas in the application of the SMS that needed to be improved.

Management– Union cooperation

To be successful in promoting the SMS and to achieve a high level of its acceptance throughout the company, it was important that BC Ferries and the British Columbia Ferry and Marine Workers' Union show a willingness to work together. We observed considerable tension in the relationship between the company and the union that was, in our view, dysfunctional. It posed a significant impediment to resolving operational safety issues and continuously improving the SMS.

We made the following five recommendations.

BC Ferries should:

- *carry out a comprehensive review of the Safety Management System (SMS) to determine which areas are functioning effectively and which areas need improvement;*
- *improve existing training and orientation processes to ensure they are sufficient to increase knowledge and awareness of the SMS across the organization, especially*

among vessel Officers and Terminal Directors and Managers to ensure they have “bought into” the SMS;

- *direct the Internal SMS Verification Audit staff to monitor the level of buy-in to the SMS;*
- *consider adopting a standardized uniform program for shipboard and terminal employees to make them easily recognizable by passengers; and*
- *work cooperatively with the BC Ferry and Marine Workers’ Union to continuously improve the SMS and operational safety.*

We found the following in our follow-up review:

Carrying out a comprehensive review of the Safety Management System

In 2007 the company embarked upon a comprehensive review of all aspects of its operational safety system, which led to the launching of the SailSafe program. Since then, many significant activities have taken place that have strengthened the SMS, such as: developing a new risk based methodology within the SMS; reviewing the company’s policies and procedures to reflect a more streamlined ‘user friendly’ set of operating policies; reviewing and improving the training program; and developing other tools and processes that are explained in more detail in the following sections. Implementing the action plan developed as a result of the company review is still ongoing, as noted elsewhere in this report.

Conclusion

The recommendation has been fully implemented.

Improving existing training and orientation processes

As part of the introduction of the SailSafe program, considerable training has been provided to staff to increase the awareness of the SMS across the organization and to ensure that they have bought into the SMS. In addition, new safety programs and ongoing activities have been established that reinforce the importance of safety. As well, a comprehensive new hire orientation program has been developed.

In the interviews we conducted, we found general agreement that a good deal of training in operational safety has taken place and that training overall is much better than it used to be. Staff generally felt that they had sufficient knowledge about the SMS and that there was good buy-in into the system. Staff at the lower levels had not received specific training about the SMS, but they all felt that their responsibilities relating to operational safety were clear, and that they had received sufficient safety training in the areas where they were working. Ship staff generally were better informed about the SMS than terminal staff. Future training expected to be rolled out, such as the SEA program, will further improve the knowledge of staff in this area.

However, we noted one area that needs more attention. There are certain internal and external requirements to provide staff with refresher training to maintain certification in a particular area or to be able to continue to work on specific ships and at terminals.

Although refresher training is being provided, the policies and procedures setting out the responsibilities for providing it and the frequency of the training needed, and when it will be delivered, are not clearly set out. We believe that this is an area that should be reviewed and more fully incorporated into the training process

Conclusion

The recommendation has been substantially implemented.

Monitoring the level of buy-in to the SMS by the SMS Verification Audit staff

As described in more detail elsewhere in this report, the company's SMS internal auditors play a significant role in reviewing the SMS and identifying areas where buy-in into the process could be improved and strengthened. They visit each ship and terminal at least once a year, audit the records, interview crews and get a good sense of how the SMS system is working. To make the process more comprehensive, we believe the audit work carried out should be more clearly defined, quantified and reported upon.

Conclusion

This recommendation has been substantially implemented.

Adopting a standardized uniform program for shipboard and terminal personnel

BC Ferries has established a workplace uniform policy that states, "all employees are expected to present themselves in a professional manner which positively reflects on the individual and the company. Employees working in positions where uniforms are required must wear the company provided uniform specified for that position." Safety objectives relating to this program are to rapidly identify employees in emergency and safety situations, afloat and ashore, and provide an appropriate degree of personal safety, comfort and fit.

The policy is supported by a detailed Uniform Requirement Field Guide contained in the Fleet Regulations.

From our observations aboard ship and at terminals, BC Ferries employees having contact with passengers are aware of, and are abiding by, the requirements of the corporate uniform policy. As well, from our interviews with employees it appears that they are in agreement with, and are dressing in accordance with, the uniform policy and related requirements.

Conclusion

The recommendation has been fully implemented.

Relationship with the British Columbia Ferry and Marine Workers' Union

Both the union and management embraced our recommendation fully and have taken many steps to improve their relationship. The most significant of those steps is the joint initiation and implementation of the SailSafe program. Both are full partners in the program and are fully represented on the SailSafe Steering Committee, the SafeWatchTeam, and at training sessions, such as the town hall meetings. As well, SailSafe Action Plans have a union and a management co-lead to ensure that plans are developed and implemented with maximum employee engagement. The company's SailSafe website describes the arrangement very well and provides good information about SailSafe, all of the action plans and the status of progress made in their implementation.

In our interviews with staff we found general agreement that the relationship between management and the union has improved significantly. Staff believes that there is now mutual respect, much better communication, cooperation, more openness and trust.

Conclusion

The recommendation has been fully implemented.

3.2 Policies and Procedures

In our previous review we found that the company's three level of manuals provided good direction on operational safety and covered all significant areas, set out clearly the levels of authority for making decisions, and allowed for staff to make appropriate decisions when required. All of the manuals were widely distributed in terminals and on vessels and provided good direction to enable staff to properly carry out their responsibilities. However, we heard from staff that there were too many manuals, that it was difficult to be familiar with all of them, that they needed to be reviewed to ensure they were consistent with each other, and that some should be eliminated or shortened. As well, some interviewees felt that changes made to the manuals were not communicated on a timely basis.

We also learned during our 2007 review that the human resources data base and the crewing operational area were modernized as electronic systems. They required current policies and procedures that clearly set out their roles and responsibilities relating to the effective functioning of the SMS. Both areas have significant responsibilities in: ensuring that regulatory requirements are complied with in all training and certifications; assigning qualified staff to vessels and terminals; and providing information to masters so that they are satisfied that staff assigned to the vessels meet regulatory and other requirements for safe operation.

We made the following two recommendations.

BC Ferries should:

- *review all of its manuals to determine whether they can be consolidated to avoid duplication and to make them more user-friendly; and*

- *ensure that both the human resources data base and the crewing operational area have up-to-date policies and procedures that clearly set out their roles and responsibilities relating to the effective functioning of the Safety Management System.*

We found the following in our follow-up review:

eFleet electronic documentation process

As part of the project working group activities in the review of the Safety Management System, the company has started to review and revise all manuals to avoid duplication and to introduce a new user-friendly electronic documentation system. There are currently three levels of manuals: Level I, BCF Operations Policy Manual that sets out the company's global policy; Level II that sets out Departmental Policy; and Level III, that sets out local (ship and terminal) procedures. When the manuals have been finalized, they are uploaded to eFleet, an electronic documentation system. The system is designed to deliver relevant, accessible and up-to-date information throughout the fleet to support safe operations. It is designed to be an on-line reference library of SMS manuals which includes an electronic document management system to keep the library up-to-date.

The implementation of eFleet is a multi-year, multi-phase project that involves fleet wide collaboration. The new system will provide electronic documentation that can be updated through a simple on-line editing and approval process, and easily accessed and searched by employees on the intranet or local computers onboard vessels. Information in eFleet is centrally located and is functionally organized into three levels of operational policy and procedures, replacing the old Fleet Regulations and other manuals.

At the time of our review, the review process was underway. Seven vessel and all terminal manuals have been completed and uploaded into eFleet. The target date for having all of them completed and uploaded is March 2012.

Interviewees generally were of the opinion that the current manuals are better than the ones they had in the past and that they provide good direction in the areas where they have responsibilities. They were aware of the company's process to review and update its manuals. However, their knowledge about the status of these manuals varied significantly. They generally believed that once the process is completed, the manuals will be more user-friendly and, when they are online in eFleet, accessing information will be better and making changes will be much easier and faster.

The company should continue with its manual review and revision process with a view to having the manuals completed and uploaded into eFleet by its projected target date of March 2012.

Conclusion

The recommendation has been substantially implemented.

The human resources data base and the crewing operational area policies and procedures

As part of the corporation's review of the SailSafe program the Crewing Field Guide has been reviewed and incorporated into Fleet Regulations. Section 9 sets out procedures for the safe and efficient staffing of the vessels and terminals. The intent of the guide is to ensure the consistent application of procedures and policies for crewing and staffing. It sets out the requirements for crew levels for vessels and shore operations, crew lists, requirements for maintaining records, absence relief, scheduling of resources, maintaining the staffing pool, certification, familiarization, and clearance.

The policies and procedures for crewing are set out in Fleet Regulations. However, the policies and procedures for the human resources data base and has not yet been developed.

Conclusion

Taking the two together, the recommendation has been partially implemented.

4 Identification and Management of Operational Safety Risks

BC Ferries is in the business of providing safe coastal ferry transportation services to its customers. In the course of its operations, it is exposed to many operational safety risks which it has to manage. A single event can inflict significant loss or negative media coverage upon the business that could have a major impact on how customers and other stakeholders view the organization. Managing those risks should therefore be an integral part of BC Ferries' business – not just a duty to satisfy laws and regulations.

The objective of risk management is to increase the value of the business by reducing vulnerability and the prospect of negative surprises. Risk management is all about understanding risks and using them as opportunities in relation to meeting the organization's business objectives.

Company-wide risk management clarifies and ties the strategic goals to the operational goals, thereby strengthening an organization's ability to manage and control risk. Risk management covers all major objectives and comprises all types of risk. However, for the risk management process to become an efficient instrument for managing risks in the organization, the right risk management culture must be present throughout the organization. That is, managers and employees must think and act based on an understanding of risk and a desire to achieve, maintain and develop the risk profile of the organization in accordance with defined objectives. Risk management culture is built gradually by involving managers and employees at all levels of the organization.

It is also important for an organization to establish a risk management policy that states the rules and provides guidance for the implementation and execution of risk management, and that specifies the scope and mandate of the risk management process. As well, it is important to have a sound risk management structure that clearly

assigns the roles, responsibilities, authorities, rights and duties, and defines arenas and forums for addressing identified risks.

4.1 Risk Objectives, Identification and Analysis

In our 2007 report we noted that company-wide risk management clarified the organization's strategic goals and tied them to the operational goals. It covered all major objectives and comprised all types of risk. However, although BC Ferries had recognized the importance of managing risk in the organization, the company had no formal risk identification and assessment process in place fleet-wide, and risk management was not formally integrated into the Safety Management System (SMS).

We made the following five recommendations.

BC Ferries should:

- *continue to review its corporate-wide Corporate Risk Register and ensure that all significant risks have been identified;*
- *prioritize individual risks as to the likelihood of each risk occurring, and develop strategies for mitigating the risks;*
- *ensure that risk management is integrated into the Safety Management System at all levels of the operations;*
- *develop the appropriate policies, structure, approach and support tools for managing risk; and*
- *use information from within BC Ferries and the marine industry to ensure that best safety practices are incorporated into BC Ferries' operations.*

We found the following in our follow-up review:

The Operational Risk Management process

The company has undertaken a comprehensive review of risk management and has initiated various activities to strengthen it throughout the organization. As a result, there is a much higher awareness of the importance of identifying and managing risks. Risk assessment training has been provided to staff and risk assessment teams set up to assess the risks. Most of the people that we interviewed have either been directly involved with the process or have been exposed to it. Although the engineering group has not yet been fully involved in the process, they will be in the future as set out in the recently issued operational risk management policy.

The whole risk management process has been reviewed, policies, procedures and guidelines developed, and further training will be provided to staff involved in the process. BC Ferries has done important work to identify its significant risks. However the process started has not been yet been completed throughout the organization.

Review of the Corporate Risk Register

Three levels of risk registers are in the process of being set up from which significant risks will flow up to the Corporate-wide Risk Register. These are: Level 1 – Divisional Risk Register, Level 2 – Departmental Risk Registers, Level 3 – Worksite Risk Registers. Two Level 3 risk registers have been completed to date, one for a terminal and one for a vessel.

The Corporate-wide Risk Register is continuously reviewed and updated as the risk assessments are carried out across the organization. It is important to ensure that the register continues to be updated as the other risk registers are completed. .

Conclusion

The recommendation has been substantially implemented.

Prioritizing risks and developing strategies for mitigating the risks

When the risk assessment process was started in the company, many risks were identified; however, the process did not clearly set out how the risks should be evaluated and prioritized. This resulted in staff identifying too many risks as critical. As noted below, a new Operational Risk Management Policy has been developed with appropriate guidelines that clearly set out how risks should be prioritized, evaluated and mitigated. A training program has also been developed and is in the process of being rolled out throughout the organization.

Conclusion

The recommendation has been fully implemented.

Integrating risk management into the Safety Management System

It is clear from our interviews that risk assessment is a fundamental part of the SMS. In addition to the formal processes that are ongoing for assessing the risks, other tools, such as the ALERT process (described below), staff meetings, the five minute beginning-of-shift meetings, and the Monday morning conference calls, are being used to identify and manage risks on an ongoing basis. However, the engineering group has not yet been involved in the risk evaluation process and training programs for developing the site specific risk registers are still being developed.

There are many processes and tools in place that help ensure that risk management is integrated into the SMS at all levels of the operations. However, much work remains to be done until all of the local area risk registers are completed.

Conclusion

The recommendation has been partially implemented.

Developing appropriate policies, structure, approach and support tools

A new Operational Risk Management Policy has been developed. It covers the following areas; the Policy, Process, Managing Worksite Risk, Guidelines for the Worksite Risk Register, Using the Matrix and As Low As Reasonably Possible (ALARP) evaluation guideline, and Task Analysis.

Conclusion

The recommendation has been fully implemented.

Incorporating best safety practices into BC Ferries' operations

In our last review we noted that some areas of the fleet have taken the initiative to incorporate risk management into their operational safety procedures; however, such initiatives and other good practices were not shared with other parts of the organization. We recommended that BC Ferries use information both from within BC Ferries and the marine industry to ensure that best safety practices are incorporated into BC Ferries' operations.

In our interviews we found that BC Ferries is doing a much better job of introducing best practices from within the organization and from others in the industry. There is a good deal of sharing of information in the organization through many of the processes that have been set up that are part of SMS, such as the documentation and risk management processes that are still ongoing, the ALERT process and related bulletins, safety briefings, Monday morning conferences and many others. In addition, the company provides good information on its SailSafe site, including all of the action plans, as well as other relevant information that is available to all staff in the organization.

BC Ferries is also pro-active in learning from, and incorporating best practices from, the marine industry both nationally and internationally. Senior staff sit on national ferry boards and committees and review and distribute useful information within the organization. Internationally, staff visit other marine organizations and attend conferences and other relevant gatherings. As well, they get bulletins and information about developments in the industry and distribute them within the organization.

BC Ferries has made significant improvements in using information from within BC Ferries and the marine industry to ensure that best safety practices are incorporated into BC Ferries' operations. However, communication to staff about national and international developments could be improved.

Conclusion

The recommendation has been substantially implemented.

4.2 Voluntary Individual Safety Observation Reporting System

A process BC Ferries had established to detect areas of risk and concern with operational safety issues that was in operation at the time of our 2007 review was the Voluntary Individual Safety Observation Reporting System (VISORS). This process allowed for individual crew members and terminal personnel to report directly on any safety issues or concerns. The issue or concern was first to be raised at the local level by an employee bringing it to the attention of local supervisors. If no action resulted, a VISORS report could be prepared by the employee, outlining the issues and providing background information. The report was then sent to the appropriate superintendent or manager who was to take corrective action. If no corrective action could be taken, the Designated Person was notified. He or she was required to investigate and report to the CEO. The CEO could then authorize corrective action.

In our 2007 review we found that staff generally felt that the VISORS was a useful vehicle for reporting safety concerns, although it was rarely used. Very few VISORS found their way to the Designated Person. Only 10 were submitted in 2006.

We believed that VISORS was, in principle, a useful tool, in that it enabled staff to bring operational safety concerns not dealt with at the local level to the attention of management and eventually the Designated Person. However, we found that the process was not effective and needed to be reconsidered.

We made two recommendations for improvement.

BC Ferries should:

- *review the purpose of the Voluntary Individual Safety Observation Reporting System and determine whether the purpose for which the system was established can be met by other processes; and, if it cannot, then its current design should be reviewed with the intention of making it more useful; and*
- *communicate the revised process throughout the organization and encourage its use.*

We found the following in our follow-up review:

As part of its review of the SMS, BC Ferries reviewed the purpose and process related to VISORS, re-launched it and made it available on its intranet website. The information on the website states that VISORS is a voluntary reporting tool for employees to have safety concerns addressed where all other avenues have failed. It provides a process for reporting unsafe acts or conditions as part of the SMS. It is also clearly stated that the first step in the process is to have the safety concerns addressed in the ALERT form described below. In case that process does not provide the employee with a satisfactory resolution and an identified safety concern remains, the VISOR process may then be used.

In our interviews we found that there still are very few VISORS that are being submitted - 25 have been submitted over the last four years and only one in the last fiscal year 2010/11. The reasons given were that some staff did not know they were still being

used and others thought that they are no longer needed and had been replaced by the ALERT process. Still, the majority of those who knew about VISORS thought that they continue to be useful in bringing issues to the attention of the Designated Person if the ALERT process has not adequately addressed the operational safety issue raised.

Although the VISORS process has been reviewed and re-launched, it would be useful to again communicate to staff that the process is still an important part of the SMS and how it should be used.

The All Learning Events Reported Today (ALERT) process

In the process of improving its safety management system, BC Ferries identified the need for a quick, easy and effective reporting tool and process for all employees. As a result the ALERT handbook and process was developed, which is guided by a commitment to continuous safety improvement. The handbook is available to all staff and is to be used to identify a hazard or situation which could cause injury or harm to a person, damage to equipment, or damage to the environment. It allows employees to put in place the preventative actions that will reduce the risk of an incident occurring. The handbook includes an Employee Injury Risk Matrix setting out how the level of risk should be determined, the various risk factors, definitions, risk reduction steps that can be taken, the form to be filled out to report a situation that should be dealt with, and the process that should be followed to deal with the risks identified.

The ALERT process was viewed as being very successful by virtually every person we interviewed. Great, very good, user friendly, excellent, very valuable, a great success, working well, open and transparent, were some of the words used to describe it. It has turned out to be an excellent tool to fully engage staff at all levels in improving the operational safety process and also enhance accountability at all levels. Since its implementation in 2008, the company has received 85 submissions in 2008/9, 1,088 in 2009/10 and 1096 in 2010/11.

The company is doing a good job of providing information to staff on its website by enabling employees to keep track of their individual submissions, providing the tools and the process for submissions, and by posting ALERT bulletins showing how individual submissions were resolved so that others throughout the organization can learn from them.

The ALERT process has been very successful in improving operational safety in the company.

Conclusion

Both of the above recommendations have been fully implemented.

4.3 Specific Risks Inherent in BC Ferries' Operational Safety

On-time Performance

In our 2007 report we noted that one of the areas that BC Ferries had focused on was measuring how well it provided timely and efficient service to its customers. "On-time performance" was one of its goals and one of the key performance indicators it measured. Bonus payments were made based on the results of these indicators. The bonus plan involved the President and CEO through to senior masters, masters and terminal directors and managers. Information was collected for all vessels regarding their on-time performance and regular reports were prepared and distributed to illustrate how well the various vessels were meeting their on-time performance goals.

It was appropriate that on-time performance was one of the company's goals and a key performance indicator being measured. At the same time, we pointed out that it was important that BC Ferries communicate to staff that, in making decisions around on-time performance, they must never compromise SMS requirements. This includes ensuring there is adequate time for proper watch handovers and exercise of vessel clearance protocols across the fleet.

We noted that because of the fact that on-time performance was linked to a bonus plan, some staff believed that on-time performance could impact safety. We believed that staff needed to be reassured that the on-time performance objective had only a minor impact on the incentive-based compensation package.

We made the following recommendation.

BC Ferries should continue to communicate to operating staff that, in making decisions around on-time performance, operational safety will never be compromised.

We found the following in our follow-up review:

The bonus plan for senior masters, masters and terminal directors and managers is no longer linked to on-time performance.

The majority of the interviewees indicated that they felt that the risk has been appropriately reviewed and steps have been taken to mitigate the risk.

It is interesting to note that on-time performance has improved from 85.2% in 2005/6 to 89.1% in 2010/11.

Conclusion

The recommendation has been fully implemented.

Vessels Transiting Active Pass

In our 2007 report we observed that there is an increase in safety risk in respect of the maneuvering and timing required when two large vessels pass in opposite directions through Active Pass. BC Ferries' schedules typically place two large passenger vessels in the Pass at the same time. The risk, in our view, arises from potential loss of steering control, loss of propulsion, electrical blackout, or human error. In addition, there is a potential risk of these vessels colliding with other commercial or pleasure marine traffic in the Pass.

We were informed that BC Ferries recognized and had significantly mitigated these risks with: constant communication among BC Ferries' vessels transiting the Pass; the installation of Automatic Identification System electronic charts to determine relative positions of other vessels; redundancy in steering pumps to offset a catastrophic steering failure; the posting of anchor watch; and a stepped-up bridge watch team.

We made the following recommendation.

BC Ferries should, as part of a formalized risk management process, undertake an assessment of the degree of risk associated with the current practice of allowing BC Ferries' vessels to transit Active Pass simultaneously.

We found the following in our follow-up review:

In 2008, BC Ferries commissioned a comprehensive risk assessment study by Force Technology of two large BC Ferries vessels passing one another in Active Pass. The study employed simulations, that while based on normal operating conditions assumed navigation under different conditions of tide, weather and traffic.

The assessment conclusion was that "passing of two major ferries at the straight reach of Active Pass has been found to involve an acceptable risk of collisions and groundings in comparison with the general risk level for this type of accident."

The Force Technology report included a number of recommendations in respect of communication, bridge procedures, voyage planning, navigational practices and emergency procedures, with the main recommendation being, "to keep up the good practice of operating good quality ferries in a cautious manner and continue the practice of meeting in the straight reach of Active Pass". BC Ferries has taken steps to implement the recommendations made and now feels that the risk is appropriately managed in this area.

Conclusion

The recommendation has been fully implemented.

Shift Handover

In our 2007 report, we observed that the handover process from watch to watch with BC Ferries is extremely limited on most of the routes examined. In most cases, there is only a 5- to 10-minute window between watch changes in the middle of the operational day. Rapid handover procedures at watch change reduce the opportunity to transmit important and relevant operational and safety information to watch replacement personnel. Ideally, there should be complete sharing between watches, including verbal communication and written handover notes or crew change logs. We noted this occurring to a degree on some vessels. Tight scheduling and the desire to minimize overtime limit the amount of face-to-face interaction among deck officers, supervisors, and crews at crew changeover times. These factors, in our view, limit the effectiveness of the handover process by reducing time available for discussions about operational and safety issues.

We made the following recommendation.

BC Ferries should review handover procedures and take appropriate action to ensure that consistent and proper watch handover occurs across the fleet.

We found the following in our follow-up review:

As part of the SailSafe program, BC Ferries has started a comprehensive review of Shift Change – Watch Handover, to determine where improvements could be made in how these changes take place, what information is being exchanged, the time available for briefings and the extent of the meetings of the parties involved. The objective of the review is to develop a best practice method that effectively addresses safety, defects, traffic, mechanical and crewing issues. The results of the review are to be included in the Level 2 Departmental policies and procedures manual that was originally scheduled to be completed in the fall of 2011. At the time of our follow-up the review was still in process.

The majority of interviewees said that they have a reasonable handover, with appropriate documentation in a log of issues that should be communicated, watch notes and verbal exchanges. Other people noted that this is still an area of weakness and there is a need for standardization of the documents used in the process and for setting out clearly what the handover should entail at the various levels.

BC Ferries has recognized that improvements are needed in this area and is continuing with the review.

Conclusion

The recommendation has been partially implemented.

4.4 Incident Reporting and Investigation

In our 2007 report we noted that the process of reporting occurrences was in place throughout the organization. Incidents reported were evaluated by the Designated Person based on the level of severity of the event. We were informed that some near-misses and other incidents that could have resulted in an accident were not being reported to management and so not input into the system. The main reason given was the fear of discipline if the employee was directly involved in, or was the cause of, such an incident. Nevertheless, staff did tell us they believed that once incidents were reported, all severe ones were investigated.

We made the following recommendation.

BC Ferries should provide key shipboard, regional operating superintendents, terminal and head office personnel with accident and incident investigation training to improve the effectiveness of these activities.

We found the following in our follow-up review:

The Site Investigation process

BC Ferries has introduced a comprehensive Site Investigation policy and procedures that is designed to establish root causation and identify remedial actions for low/moderate severity incidents, particularly “near miss learning opportunities”. The Site Investigation process is now well established and a total of 15 investigations have been completed since the past year when the policy was introduced.

To support the Site Investigation process a new Initial Assessment Report (IAR) has been developed and implemented. The IAR combines elements of an incident report, incident investigation and risk assessment into one common format. The IAR is a proactive safety reporting tool that is used by a work site to provide a summary of a safety event, including actions taken/intended and current risk level, for other sites and the operational chain of command.

The company has also developed and implemented a 5-day in-house Human Factors and Site Investigation course for managers, supervisors and Site Safety Committee members. This training, which develops students’ theoretical knowledge and practical skills, contains a mix of both BC Ferries and non-BC Ferries case studies that are examined by student syndicates. So far, a total of 67 students have been trained over the past two years.

Interviewees generally stated that all incidents are reported and investigated and that the investigation process has improved. There is now a much greater level of trust in the safety investigation process and generally employees feel confident that reported safety incidents will be investigated to gather the lessons learned and prevent reoccurrence, and not to apportion blame.

The Operations and Security Centre

Since our 2007 Report, BC Ferries has established the Operations and Security Centre (OSC) with the objectives of providing:

- enhanced situational awareness and assessment for operations;
- enhanced security monitoring;
- enhanced incident response facilitation; and
- support for day-to-day operations and incident management.

The OSC collects and fuses information from a variety of sources to help deter, detect, assess and respond to operational, engineering and security incidents as well as all service interruptions. It also supports field operations by; providing real-time situational awareness and security monitoring; coordinating incidents and response activities; and issuing incident status updates, customer service notices and recovery action plans. This includes responding to any safety, security or environmental incidents, mechanical failures and severe weather or other service interruptions. In addition, the OSC continuously monitors all vessel movements, observes traffic congestion at terminals and remotely operates all electronic highway signs.

The OSC also provides a state-of-the-art Corporate Emergency Centre that can be activated in response to any potential incidents. In such cases, the OSC leads a coordinated company-wide response and provides immediate support for all front-line employees involved in an incident or service interruption. To be able to provide these services, the OSC established the following:

- local and centralized video management;
- centralized alarm management;
- accident investigation system monitoring;
- incident response system;
- terminal and vessel vocal resource information database; and
- map-based dashboard that tracks every vessel and associated alerts so that at any point in time immediate and effective support can be provided.

On its website it sets out when the Centre should be called regarding: incidents, service interruptions and changes, customer service impacts, operational awareness, and information queries. It also provides information about the four levels of incidents as well as the roles and responsibilities of the people involved.

The Centre has had a significant positive impact on operational safety in the company.

Statistical information about safety incidents

Safety incidents are those reported at include severity Levels 1 to 3 (as described above). The number of safety incidents reported in all regions over the last five fiscal years is as follows: 2007 – 317; 2008 – 455. 2009 – 974; 2010 – 822; 2011 – 1,100.

The Operations and Security Centre began tracking incidents in April 2009 and, as a result, incidents can be reported more easily and quickly. This has resulted in an increase in the overall numbers of reported incidents.

Local Area Investigations are carried out for severity Level 2 and 3 incidents. The number of these investigations has been on a downtrend the last five years: 2007 – 20; 2008 – 21; 2009 – 10; 2010 – 5; 2011 – 3 (to November 2011).

Operational Site Investigations were introduced in 2010. There were 3 investigations carried out in 2010 and further 12 to November 2011.

Divisional Inquiries

Divisional Inquiries are carried out on major incidents – those resulting in the death of a passenger or employee or in major damage to property or an asset. Such incidents include groundings, ramp failures, vehicle incidents, deviations from track, and engine room fires. Table 1 shows the 17 Divisional Inquiries carried out from 2000 to 2011 and types of incidents.

Table 1: Divisional Inquiries, 2000–2011

Year	Type of Incident
2000	<ul style="list-style-type: none"> • Truck gasoline spill • Collision with pleasure craft
2001	<ul style="list-style-type: none"> • None
2002	<ul style="list-style-type: none"> • Sewage incident • Grounding • Hard landing
2003	<ul style="list-style-type: none"> • Engine room fire
2004	<ul style="list-style-type: none"> • Collision • Passenger injury • Vehicle accident • Vessel veered from track • Deviation from track
2005	<ul style="list-style-type: none"> • Engineering incident/injuries • Ramp incident • Grounding
2006	<ul style="list-style-type: none"> • Grounding and sinking
2007	<ul style="list-style-type: none"> • Departure incident
2008	<ul style="list-style-type: none"> • None
2009	<ul style="list-style-type: none"> • Generator fire
2010	<ul style="list-style-type: none"> • None
2011	<ul style="list-style-type: none"> • Truck in water

Investigations by the Transportation Safety Board

The mandate of the Transportation Safety Board is to advance transportation safety in the marine, pipeline, rail and air modes of transportation by:

- conducting independent investigations, including public inquiries when necessary, into selected transportation occurrences in order to determine their causes and contributing factors;
- identifying safety deficiencies, as evidenced by transportation occurrences;
- making recommendations designed to eliminate or reduce any such safety deficiencies; and
- reporting publicly on their investigations.

As part of its ongoing investigations, the Transportation Safety Board also reviews developments in transportation safety and identifies safety risks that it believes government and the transportation industry should address to reduce injury and loss.

Table 2 below lists the incidents related to BC Ferries operations that the Transportation Safety Board has investigated since 2000. All of the investigations have been investigated except for the last two that are in process.

Date of incident	Description of incident
September 14, 2000	Collision between the <i>Spirit of Vancouver Island</i> and the pleasure craft <i>Star Ruby</i>
August 13, 2002	Malfunction of the Automatic Steering Control System for right angle drives, <i>Bowen Queen</i> , Gabriola Island
May 13, 2003	Engine room fire on the <i>Queen of Surrey</i> , Queen Charlotte Channel
June 30, 2005	Grounding of the <i>Queen of Oak Bay</i> at Sewell's Marina, Horseshoe Bay
March 22, 2006	Grounding and sinking of the <i>Queen of the North</i> , Gil Island
2007	None
2008	None
2009	None
2010	None
November 18, 2011	Docking incident involving the <i>Queen of Coquitlam</i> at Departure Bay (ongoing)
December 20, 2011	Vessel Hard Landing at Duke Point involving the <i>Coastal Inspiration</i>

Conclusion

The recommendation has been fully implemented.

4.5 Dealing with Issues Arising from Audits and Inspections

The Operations Safety Log

Operational safety deficiencies that have been noted by internal and external audit and inspection processes are recorded in the Operations Safety Log (OPL). The log allows centralized management of incidents, investigations and audits. It also keeps track of the follow-up actions by the local areas responsible for addressing the issues raised, as well as of the related actions taken by head office. Items are added to the log as they are reported, and deleted if they have been satisfactorily addressed. The log also allows sharing of information, avoids duplication, provides for more timely reporting and closure processes, and provides historical information on incidents as required.

In our 2007 report we noted that our analysis of the items in the Operational Safety Log indicated that more focus needed to be placed on ensuring that fewer of the items became overdue and on clearing those that were. We also noted that no severity ratings were attached to the items in the log, and believed that attaching such ratings would help both senior management and the Safety Committee know what safety risks are being posed by items not having been addressed.

We made two recommendations for improvement.

BC Ferries should:

- *continue with its efforts to ensure that all of the items in the Operations Safety Log are addressed in a timely manner; and*
- *apply severity levels to the items in the Operations Safety Log, to focus attention of senior management and the Safety, Health, Environment and Security Committee on the serious safety-related issues that must be dealt with.*

We found the following in our follow-up review:

Addressing the items in the Operations Safety Log in a timely manner

The Operations Safety Log is updated on a weekly basis and the log, along with statistical information which shows the safety critical items by region, by vessels and terminals and offices, is then distributed to senior management and other staff that review the items in the log on an ongoing basis.

The majority of interviewees indicated that the items in the OSL are generally addressed on a timely basis and that there are few items that are overdue. The items in the log are updated every week and reviewed by all levels of management. Overdue items are flagged and followed up. The total number of items in the log at the end of each of the last five years and related overdue items are as follows:

Year	2007	2008	2009	2010	2011
Total open items in the OSL at end of the year	292	333	219	178	183
Overdue	27	17	17	20	13
Percentage Overdue	9%	5%	8%	11%	7%

Table 3: ISM non-conformities, including CARs and Observations issued during the fiscal years 2007–2011

Year	2007	2008	2009	2010	2011
Total non-conformities	733	962	1,488	973	1,094

There is serious attention given to dealing with the items in the Log in a timely manner by all levels of management.

Conclusion

The recommendation has been fully implemented.

Applying severity levels to the items in the Operations Safety Log

All of the safety related items are included in an Operational Safety Log, which is divided into two sections:

The Safety Critical Log, which contains:

- BC Ferries Internal Safety Audits action items (Corrective Action Requests of Severity Level 2 or 3)
- External Audits action items (all Non-compliance Notes)
- BC Ferries Investigations (all Local Area Investigations and Divisional Inquiries recommendations)
- BC Ferries Employees (all VISORS)
- Transport Canada Inspectors (all TC Deficiency Notice)
- Health Canada Potable Water Inspectors (HC Notice Critical)
- Transportation Safety Board Investigations (Recommendations)
- Any Non-safety Critical Log item that becomes overdue.

Each item in the log is classified by severity level.

The Non-safety Critical Log, which contains:

- BC Ferries Internal Safety Audits action items (Corrective Action Requests of Severity Level 1)
- Health Canada Potable Water Inspections (HC Notice Non-Critical) Transportation Safety Board Reviews (TSB Safety Notices)

The Operational Safety Log is divided into Safety Critical and Non-safety Critical sections. The safety critical log classifies each item into one of three safety categories.

Conclusion

The recommendation has been fully implemented.

5 Staffing Vessels and Terminals with Qualified Employees

Any operational system such as marine transportation must ensure that it can operate safely and in compliance with relevant regulations, codes and standards and with any internal company requirements. In this regard, operational safety depends to a great extent on the marine transportation system having staff who are qualified – not only with tickets or certificates, but with competencies such as skill, knowledge, experience, and training for the exacting requirements of the system.

Certain personnel at BC Ferries must hold and maintain certificates of competency issued by Transport Canada. These statutory requirements and qualifications for vessel crews are laid out in the Canada Shipping Act and in regulations such as the Ships' Crews Food and Catering Regulations, the Crewing Regulations and the Marine Certification Regulations. Transport Canada determines the minimum number of crew for each vessel in the BC Ferries fleet according to the number of passengers the vessel carries at any time. BC Ferries Fleet Regulations state that crewing levels must be established for all operational, non-operational and stand-by vessels.

The Crewing Department ensures that each position on a vessel and terminal is staffed with the proper number of qualified and certified staff by day, watch and license. Each vessel operates with two, three or four sets of crews (or “watches”). The company staffs these ships with personnel from three employee classifications:

- regular crews (scheduled, including staffing pool personnel);
- casual crews (on call 12 months of the year); and
- seasonal crews (on call from April 15 to September 15).

In our 2007 report we noted that there was no assurance that the Human Resources Management System database was always current, accurate and complete in terms of personnel information. We were informed that at times it could take months until the records were entered into the system because the information was not supplied by the supervisors and the employees to Human Resources on a timely basis.

Some controls in the system were not functioning as designed. The Internal SMS Verification Audit Group discovered in an audit that certain components of the scheduling program that show conflicts had been removed and, as a result, exceptions were not highlighted.

Crewing personnel indicated that one of their biggest challenges was to ensure that qualified seasonal staff were available during peak summer periods. It was suggested to us that a significant number of seasonal employees do not return from the previous

year. The result is a need to increase staff significantly on vessels during peak periods, with some vacancies being filled by seasonal personnel without all the required training.

We made two recommendations in this area:

BC Ferries should:

- *ensure that certification, training and other information is provided by supervisors and employees and is entered into the Human Resources Management System database on a timely basis; and*
- *review the SmartStaff scheduling program to ensure that all the controls are functioning as designed so that staff is not assigned to positions for which they are not qualified.*

We found the following in our follow-up review:

Entering information into the Human Resources Management System database on a timely basis

We found that the Training Department enters the required information in the Human Resources Management System database on a timely basis. Interviewees confirmed that staff assigned to the ships and terminals had up-to-date information on certification, training and on the other requirements for their positions.

Conclusion

The recommendation has been fully implemented.

Reviewing the SmartStaff scheduling program

BC Ferries has reviewed the SmartStaff program and made the necessary improvements that were needed to ensure that the information used for staffing purposes continues to be current and reliable.

The Crewing Department is responsible for scheduling the staff that are needed to work on the ships and terminals and for ensuring that staff assigned to jobs have the necessary certification, qualification, training and other requirements to carry out their responsibilities competently with due regard to operational safety. The department obtains the information from the Training Department's Oracle program that is continuously updated. The information is transferred to the SmartStaff program, which is then used to prepare the schedules for the assignment of staff to the various locations and the shifts to be worked. The information also includes the individual expiry dates for certification, training and the other qualifications that are required for various jobs. The program produces daily reports of warnings for expiry of certification, training requirements and other matters that are flagged by the program. It also includes controls to ensure that only qualified staff are assigned to the various positions and that the regulatory requirements are complied with.

All of the people we interviewed regarding this area confirmed that the current process is working well and they have not had any staffing issues with crewing such as they had in the past.

Conclusion

The recommendation has been fully implemented.

5.1 Training in Operational Safety

Those responsible for training have a significant task in ensuring that BC Ferries' 4,200 employees meet their mandatory, regulatory and optional training requirements. The task is made more challenging in that the nature of the business is seasonal, and drawing employees from operations for training during the peak summer traffic periods is difficult. During non-peak periods, when more employees are available, training opportunities for particular courses may be restricted by the limited number of classes, seats available, as well as other external drivers such as refit scheduling impacting trainer/student availability.

Training within BC Ferries is guided by a number of requirements set out in the Canada Shipping Act, the ISM Code and BC Ferries Fleet Regulations. The ISM Code, for example, stipulates a number of training requirements relative to a company's SMS:

- The company should establish procedures to ensure that new personnel and personnel transferred to new assignments related to safety and protection of the environment are given proper familiarization with their duties. Instructions that must be provided before sailing should be identified, documented and given.
- The company should ensure that all personnel involved in its safety management system have adequate understanding of relevant rules, regulations, codes and guidelines.
- The company should establish and maintain procedures for identifying any training that may be required in support of the SMS and ensure that such training is provided for all personnel concerned.

The training function for BC Ferries is carried out at five principal locations: Swartz Bay; Departure Bay; Little River; Horseshoe Bay; and Tsawwassen. Training for the North Coast is administratively managed from the Departure Bay training office.

BC Ferries offers four levels of training:

- Regulatory/mandatory - training leading to certification (e.g., Medical Emergency Duty training); this is given highest priority;
- Regulatory/discretionally - which is mandatory but the timeline is discretionary (e.g., Bridge Resource Management training);
- BC Ferries mandatory targeting skill or processes (e.g. Site Investigation and Human Factors training); and
- BC Ferries discretionary – optional training intended to enhance personal development or supervisory skills (e. g. prevention of violence in the workplace training).

Overall BC Ferries delivers over 95 different courses. Of these, about two-thirds are delivered by BC Ferries' internal trainers. The remainder is delivered by external agencies, such as St. John's Ambulance or the Justice Institute.

Training for newly hired employees is carried out ashore, with a portion of this being self-study. For those assuming positions on vessels, safety-oriented training is administered on the vessel to which a new hire is assigned. Position-specific orientation packages have been developed for most positions onboard vessels and at the terminals. These are presented to each new employee through a well-designed, high quality orientation package that is tailored to the specific positions. Review of the content of this package is provided by a combination of self-study, human resources input, and supervisory-led discussion.

In our 2007 report we noted that the company was committed to providing its employees with ongoing opportunities for training. However, we also noted that training needs were not always met or uniformly provided across the organization, and that there was a universal concern throughout the organization about the training and familiarization provided to seasonal staff. As well, there was a need for more structured evaluation guidelines to test the competence of candidates on their skills and knowledge and to assess the degree of success trainees had in implementing the concepts and protocols taught during a course.

We made the following recommendation:

BC Ferries should review its training programs and ensure that required training is provided on a more timely and equitable basis throughout the organization.

We found the following in our follow-up review:

During the fiscal year ended March 31, 2011, BC Ferries provided 12,649 training days to staff and is planning to deliver 11,420 days in 2012. In the 2011/2012 fiscal year, the budget for operational training, including familiarization, is \$11,674,000.

Review of the training programs

BC Ferries has recognized that its training program could be improved and has accordingly reviewed the whole program and made substantial changes to how the program is structured and how training is provided to its staff. These changes include development of new courses, providing more training opportunities to staff, implementing the new Standard Education and Assessment (SEA) program, developing in-house trainers to increase the capacity to provide more training, placing more focus on job specific training, providing more on-line training and self study to staff and establishing the Training Academy.

The vast majority of interviewees told us that training has improved substantially since our last review. Comments to us noted that there is a great deal more focus on training, there have been substantial changes for the better, training is more position specific, it

is provided as needed, it is more standardized and is of better quality, it is well organized, much more training is available now, and that the SEA program is very good.

An issue that has been raised where improvements could be made is in how refresher training is managed. We were told that the training department does not keep track of all types of refresher training. Its position is that it provides the initial training, but refresher training should happen on site and should be delivered by the supervisor. However, we were also told that refresher training is included in the SEA program. As we noted in section 3.1 in this report, this area needs to be looked at and clarified as to where the responsibilities for providing this training are, what training should be provided in what areas and how, and who should provide the training.

The Standard Evaluation and Assessment (SEA) program

The purpose of the SEA program is to establish a standardized and consistent education and clearance process across all terminal and vessel positions at BC Ferries. The program is designed to incorporate best practices in the industry and is supported with comprehensive documentation and materials. Trainers are used solely to provide the training and testing, and clearance is performed by others qualified to carry out those activities.

The SEA program consists of the following four key phases:

- Self-Study (Fleet or Terminal Wide) — a self-study guide, self-assessments, and a summative exam. A candidate must pass the multiple-choice question summative exam prior to moving on to the next phase;
- Onboard and/or Onsite Education (Vessel or Terminal Specific)— structured and documented activities with a detached educator;
- Clearance (Vessel or Terminal Specific)— structured and documented clearance activities, a written exam with a detached clearer; and
- Career progression – involves two phases. The first phase focuses on enhancing the skill of the individual in the current position and the second phase focuses on progression requirements for the next position.

Implementation of the program started in 2009 with deck and terminal positions. Implementation for engineering and catering positions will take place during the next three years, and full implementation for all positions is expected to be completed by the end of fiscal year 2015/16.

All of the staff we interviewed indicated that SEA is an excellent program.

The Training Academy

At the time of our previous review, BC Ferries was in the process of developing a Training Academy designed to meet its training needs and requirements. The Academy has now been developed and is fully functional. It is described as being both virtual and physical, and is intended to create, sustain and resource a learning culture that builds on the company's current training infrastructure while also introducing new best practices. A website has been set up which is the virtual segment of the Academy, and

is a learning resource centre. It provides the access point for developing and coordinating an individual employee's personal learning plan. From a physical perspective, three modern classrooms have been added to the suite of training resources.

The Academy is coordinated by the company's Operational Training Department, and is relying on subject matter expertise from every division and department within the company. As well, the resources of external experts are brought in to ensure that the material is current and reflective of industry best practices from a virtual perspective. One of the main partners is the British Columbia Institute of Technology, Marine Campus. This Partnership ensures that the company has access to the most modern and capable marine simulation centre and associated courseware in the world.

The Academy is a good instrument in further improving training in the company.

The training program has been reviewed and significant improvements have been made in providing training to employees. An area that still needs attention, however, is refresher training (as previously discussed).

Conclusion

The recommendation has been substantially implemented.

Bridge Resource Management

Weakness in bridge organization and management has been cited as a major cause of marine casualties worldwide, with accidents frequently caused by resource management errors. Bridge Resource Management (BRM) training and practices reduce the risk of marine casualties by helping a ship's crew anticipate and correctly respond to a ship's changing situation. BRM is defined as the effective management and utilization of all human and technical resources available to a bridge team to ensure the safe and efficient completion of a vessel's voyage. It begins before the voyage with the passage plan and continues through to the end of the voyage with the passage debriefing.

The principles of good management practice can be applied to bridge management and control. These pertain to bridge officers' skills such as teamwork, team-building, communication, leadership, decision-making and effective resource management. Key elements to BRM are: passage planning; passage planning briefing; bridge manning; bridge team training; masters' standing orders; and end-of-voyage debriefing.

In our 2007 report we noted the following weaknesses that needed to be reviewed and improved:

- there were no formal pre-departure and pre-arrival meetings of bridge personnel to establish condition of voyage variables and resultant impacts, if any, on vessel navigation/operation;
- there was a significant variability in the makeup of the core group of deck officers on the bridge, particularly during peak summer months and vacation periods. Synergy,

cohesion and consistency among the officer/bridge crew are an important aspect of the SMS and critical to well-functioning bridge resource management;

- the standards of Bridge Resource Management training were not sufficiently stringent; and
- crews were not always adequately prepared to operate new equipment.

We noted that BC Ferries had recognized the importance of BRM training and had made a concerted effort to dramatically increase the number of deck officers trained in this area. In addition, the Training Academy that was being developed would include a BRM component and the use of simulators in that training.

We made two recommendations for improvement.

BC Ferries should:

- *establish criteria, policies and procedures for crew selection and assignment that will promote greater cohesion and synergy among bridge crews for each watch and shift period; and*
- *continue to accelerate the rate of Bridge Resource Management refresher training to ensure the principles are instilled in and practiced by deck officers in vessel operation.*

We found the following in our follow-up review:

Establishing criteria, policies and procedures for crew selection and assignment

BC Ferries has recognized the importance of Bridge Resource Management (BRM) and as part 2 of its SailSafe action plans, under Bridge Resource Management and Procedures, it has set out the various actions it intends to take to improve consistency in application and understanding of BRM throughout the fleet. These actions include:

- reviewing current training programs in BRM, communications, human factors, and risk assessment;
- establishing baselines for training and the development of standard operating procedures in BRM;
- reviewing fleet regulations to ensure they cover BRM objectives and facilitate standard operating procedures in BRM;
- establishing a fleet wide communication protocol;
- establishing an assessment system to ensure bridge teams meet BRM expectations;
- sharing best practices in BRM and training with other marine transportation companies;
- implementing routine bridge team meetings to discuss BRM topics; and
- providing officers returning from BRM training with opportunities to share learning from the completion of their training.

Although the work to implement some of these action plans has started, the criteria, policies and procedures for crew selection and assignment that will promote greater cohesion and synergy among bridge crews for each watch and shift period has not yet been developed.

The message from interviewees is that there has been significant focus placed on ensuring that crew selection and assignment to ships promote greater cohesion and synergy among bridge crews for each watch and shift period. Comments made were that there is a better team work on the bridge, this area has been improved dramatically, bridge team management is now used, dedicated training is being provided to deck teams, there is more sharing of information and back up, there is better communication on the bridge, and refresher training has been provided.

The interview results clearly show that important improvements have been made to ensure that there is greater cohesion and synergy among bridge crews. However, the criteria, policies and procedures for crew selection and assignment have not yet been developed.

BC Ferries has accelerated the rate of Bridge Resource Management refresher training to ensure the principles are instilled in and practiced by deck officers in vessel operation. The new simulator project will be a great tool to further improve the training provided to bridge crews.

Conclusion

The recommendation has been partially implemented.

Continuing to accelerate the rate of Bridge Resource Management refresher training

Since our last review BC Ferries has substantially increased the BRM refresher training provided to deck officers. The Table below provides information about the number of officers trained in each year from 2007 to 2011. In 2009, the bulk of the target audience training was complete and from then on the focus has been on ensuring that new hires are provided with the training.

Bridge Resource Management training provided from 2007 to 2011

Year	2007	2008	2009	2010	2011
Number of officers trained	88	90	34	12	4

The company is in the process of implementing its new Bridge Team Simulation project. The vision of this project is the development and delivery of world-class deck officer technical and team training that is locally accessible, integrated within the company's normal operating cycles, and targeted to meet the needs of the bridge teams. Its mandate is to provide affordable training that will reduce operational risk, minimize operational impacts, lay the foundation for establishment of a continuous learning culture, and foster world-class BRM practices.

To date, three permanent simulator training units have been established in Swartz Bay, Tsawwassen and Departure Bay, with appropriate software that includes a simulation

database and ships' hydrodynamic models for 13 ship classes. It is resourced by a permanent instructor team which will develop and deliver the training programs. The curricula will address bridge team training, event based training and individual bridge officer professional development. The program will deliver targeted training through September to the end of May each year and support the training requirements as they evolve. A second phase of this program is being considered to further expand the geographical footprint, thereby reducing student travel time and associated costs.

The training team is currently working on curriculum development with the assistance of external expertise. All curriculum will be tailor-made for BC Ferries and will address operational requirements. Pilot courses have been completed at three sites. The feedback received from the participants has been positive and will be used to improve the program. The course is being scheduled for all bridge teams - master, chief officer, second and third officers and quarter master. A senior master will also be present at the courses and act as an observer and mentor.

Conclusion

The recommendation has been substantially implemented.

Crowd Management and Control Training

A complete understanding and effective application of the principles of crowd management and control are essential components of a marine safety system. The standard by which these are to be conducted and evaluated is contained in the Canada Shipping Act, BC Ferries Fleet Regulations, the ISM Code and the Seafarers' Training, Certification and Watchkeeping (STCW) Code (to which BC Ferries subscribes).

In our 2007 report we noted that training was offered by BC Ferries in crowd management and control and consisted of one day of classroom instruction. In addition, each vessel was supplied with a video to familiarize and refresh catering attendants and other crew members with the crowd management principles.

The number of training days devoted to passenger control courses for the period 1999–2006 showed that only 41% of regular catering and only 25% of deck staff had completed the initial one-day course. Furthermore, we found an uneven distribution of crowd management and control training by region, with it ranging from a low in the North Coast to significantly higher in the South Coast. We also found no crowd control training for terminal personnel to teach them how to deal with large numbers of passengers boarding and disembarking from vessels. We noted that BC Ferries had a plan that showed that all deck and catering staff will have received this initial training by March 31, 2011.

While newly hired catering staff received some orientation crowd management, we noted there was no reference to crowd management and control in the Catering Attendant Training Handbook. Also, from interviews, we determined there is little or no crowd management and control refresher training. We were concerned that this lack of

a standardized approach throughout the fleet could inhibit an effective emergency response.

Our analysis of the state of crowd management and control training led us to believe BC Ferries should put greater emphasis on the importance of crowd management and control in its overall training regimen. We believed that BC Ferries should ensure that crews of vessels operating in exposed northern waters of the British Columbia coast be given equal opportunity for crowd management and control training.

We made three recommendations in this area:

BC Ferries should:

- *accelerate the rate of crowd management and control for all employees to be trained in this important area;*
- *establish a systematic approach to ensuring that catering department staff are regularly exposed to crowd management and control videos on an ongoing basis; and*
- *determine the minimum period acceptable between initial and refresher training in crowd management training, and initiate a program of refresher training consistent with that finding.*

We found the following in our follow-up review:

Accelerating the rate of employee training in crowd management and control

Crowd Management and Control Principles are now encapsulated into two Transport Canada regulated courses, namely Passenger Safety Management (PSM) and Specialized Passenger Safety Management (S-PSM). Marine Personnel Regulations stipulate that all vessel operations near Coastal 2 routes must have met these training requirements by November 7, 2011. BC Ferries met that goal and is now exceeding it by continuing to offer this training to crews working on Sheltered Waters routes. The table below shows the number of employees trained in each course since the new courses were rolled out and indicates greater than 100% of the target audiences have received the requisite training. This is indicative of employees working on sheltered Waters vessels having already received their training.

	Target	Actual
Passenger Safety Management Training Days	834	1970
Specialized Passenger Safety Management Training Days	648	689

BC Ferries has accelerated the rate of crowd management and control training for all employees. There has been a big push to provide the training to employees by November 7, 2011 to comply with Transport Canada requirements.

Although Passenger Safety Management training for terminal staff is not currently a Transport Canada requirement, BC Ferries is developing PSM-terminal training over the next fiscal year, with the intent of rolling this training out to appropriate terminal staff over the next several years.

Conclusion

The recommendation has been substantially implemented.

Exposing catering department staff to crowd management and control videos

Crowd management and control videos have been provided to each ship and the ship drill schedules include a requirement to view and debrief their content on a quarterly basis.

Conclusion

The recommendation has been fully implemented.

Refresher training in crowd management and control

As noted above, crowd management and control training has been provided to staff in excess of Transport Canada requirements. However, the company has not yet carried out a review to determine the minimum period acceptable between initial and refresher training in crowd management training, nor has it initiated a program of refresher training consistent with such finding. BC Ferries states that a refresher training course will be developed by 2013 as this deadline will be prior to the internally-driven five-year expiry for the first graduates of the PSM/S-PSM training.

Conclusion

The recommendation has been partially implemented.

5.2 The Familiarization Process

Familiarization is a process whereby a properly certified and experienced employee is introduced to a new work site and given appropriate exposure to the intricacies of that site. This process applies to both terminals and vessels. Section 6 of BC Ferries' Fleet Regulations sets out the requirements for familiarization and clearance.

We noted in our 2007 report that the familiarization process was specific to each vessel or terminal in terms of time, methods and clearance process. It could also be operations-specific for critical areas such as systems and equipment operations and could focus on operational safety and safe workplace practices and controls.

As well, we noted that the quality of the familiarization could vary significantly, depending on who was providing it. Each supervisor determined the level of familiarization required based on an individual's knowledge of, and competence for, critical systems and equipment. However, different people provided familiarization, and the approach and quality of the familiarization provided to staff could vary significantly.

We believed there was a need to ensure that staff received a consistently high level of standardized familiarization on all vessels and at terminals.

We made two recommendations for improving familiarization:

BC Ferries should:

- *review the familiarization process and ensure that it is carried out uniformly across the organization; and*
- *ensure that the documented information provided in the familiarization process is standardized to the extent practicable.*

We found the following in our follow-up review:

Reviewing the familiarization process

BC Ferries recognized that its familiarization process could be improved and undertook a thorough review of the process to determine what improvements should be made. Traditionally, a job-shadowing approach to familiarization was utilized, whereby the learner is paired with an experienced individual and is “shown the ropes”. Although this approach has worked with varying degrees of success in the past, the company decided to transition familiarization to a more systematic, auditable, and standardized approach, and developed the Standard Education and Assessment (SEA) model, which is described in more detail in section 5.1 above. The traditional job-shadowing approach to familiarization will gradually be replaced as SEA is implemented for each position. To date, the program has been implemented for various deck and terminal positions and full implementation for all positions is expected to be completed by the end of fiscal year 2015/16.

Interviewers noted that the familiarization process has improved since our last review and sufficient familiarization is provided to staff. However, they also believe that the new SEA program will make it even better.

Conclusion

The recommendation has been partially implemented.

Standardization of the documentation used in the familiarization process

There has been extensive standardization of the familiarization process as a result of the development of the SEA program. The review and introduction of further standardization will continue as the program continues to be developed and rolled out.

Conclusion

The recommendation has been partially implemented.

6 Monitoring and Auditing Safety Policies and Practices

To ensure that BC Ferries' operational safety policies and practices are carried out and the company is in compliance with regulatory requirements, appropriate monitoring and reporting processes must be in place. These include carrying out regular audits and inspections, conducting periodic exercises that simulate emergencies, and providing regular reporting to senior management.

6.1 Internal Monitoring

The Internal SMS Verification Audit Group

The Internal SMS Verification Audit Group (IVAG) monitors vessels and terminals in accordance with documented procedures for the conduct of audits. This group focuses on the Safety Management System (SMS) to ensure BC Ferries meets regulatory requirements, exercises due diligence and maintains safe operation of the company's vessels and terminals to ensure the safety of passengers and employees. Its audit program includes visiting headquarters and each vessel, terminal and shore office annually. The results of the audits are reported to the responsible site managers, including any Corrective Action Requests (CARs) in the case of non-compliance. IVAG is also responsible for arranging follow-up and close-out of CARs and for providing information about the results of IVAG's activities to the Designated Person for information and follow-up.

We noted in our 2007 report that IVAG played a significant role in monitoring how well the SMS was working throughout the organization. However, the audit staff primarily undertook a compliance function, reviewing all documentation to ensure its completeness, accuracy and currency. Staff we interviewed believed that the work carried out by IVAG was useful; however, the process was described as a detailed, paper-driven compliance exercise that failed to address significant operational safety issues. There was a feeling that the direction of the group needed to change. Instead of concentrating to such an extent on paperwork and compliance, IVAG should observe operational safety procedures and protocols to a greater extent.

We also believed that there needed to be a shift in focus for IVAG and that IVAG should, in addition to its compliance audit functions, undertake to observe operational safety procedures and protocols to a greater extent. Since IVAG had a good overview of how well the SMS is functioning across the organization, it was in a position to provide information to the Designated Person for fleet-wide circulation about observed and emerging safety issues.

We made two recommendations for improvement:

BC Ferries should:

- *direct the Internal SMS Verification Audit Group (IVAG) to observe operational safety procedures and protocols to a greater extent, and to provide the Designated Person with information on safety issues for fleet-wide circulation; and*
- *introduce surprise audits in IVAG's regular audit program.*

We found the following in our follow-up review:

The SMS auditors' role has changed since our last review. They are much more involved with monitoring the SMS and reporting to the Designated Person the results of their audits on a regular basis. The audit checklists have been re-designed with a view to focusing more on SMS and to providing a more useful service to both senior management and the auditees. The yearly audits have been increased from one day to two days for each major vessel per year to make the audits more comprehensive. As well, surprise audits are now included in the program. The findings of the audits are reported and discussed with the Designated Person on a regular basis.

Feedback from interviewees indicate that the audit process has changed substantially from the way audits were done at the time of the 2007 review. They are seen as being much more fair and useful than in the past. Comments made were: it is a good and useful process, they do a very thorough job, they are more appreciated now, the system is very effective, provide good suggestions, the relationship with the auditors is good, auditors are well qualified and are trusted and they are much more helpful.

Conclusion

Both of the recommendations have been fully implemented.

The Role of Superintendents and Managers in Operational Safety

Marine, engineering, catering and terminal superintendents and terminal managers are a key connection between head office and the regions with respect to operational safety. Each is responsible for the safe and efficient operation of their areas, in accordance with regulatory requirements, corporate policies and strategic plans. Policies and directives related to operational safety issued by senior management, for example, are disseminated to five marine superintendents, each of which is responsible for key result areas such as:

- overseeing and monitoring the professional maritime operation of ships and assigned crews through on-scene evaluations and visits;
- implementing safety programs and monitoring their effectiveness;
- monitoring the condition of vessels for maintenance and refit requirements;
- monitoring compliance with external regulations and legislation; and
- preparing and monitoring budgets for operational financial centers within the region.

The superintendents are instrumental in promoting the principles of the SMS and monitoring its effectiveness. They are required to conduct semi-annual inspections on each vessel to ensure the ISM Code and the SMS are being practiced.

We noted in our 2007 report from our examination of the records of both internal and external audits that the required inspections may not always have been carried out. We believed there was a need to ensure that such inspections were carried out and documented on a timely basis, and that the benefits of the SMS were promoted at those inspections.

We made two recommendations for improvement:

BC Ferries should ensure that:

- *superintendent inspections cover operational safety procedures and protocols and be documented as required; and*
- *superintendents, and terminal directors/managers are provided with the necessary training to enable them to properly carry out their inspections and to promote the SMS at all times.*

We found the following in our follow-up review:

Superintendent inspection coverage of safety procedures

BC Ferries has revised and standardized the checklists for marine, engineer and catering superintendent inspections, and inspections are carried out. However our interviewees felt that there are variations in how the inspections are carried out and some people questioned the value of these inspections. It was pointed out that they are not always done as required, the checklists are not thorough enough and are not standardized, and the whole inspection process could be more effective.

Conclusion

The recommendation has been partially implemented.

Providing training to superintendents and terminal managers

In the interviews we conducted about the status of training provided, we were informed some superintendents that they did not get any training. Some said that they have received some training and others said that there is no need for training because the inspection process is set out in the checklists. The training department told us that there is no course in training for inspections in this area, however the Human Factor and Site Investigation course include a module on the SMS and this training is attended by all superintendents and terminal managers.

Conclusion

The recommendation has been partially implemented.

6.2 Monitoring by External Agencies

Transport Canada

Transport Canada develops and administers policies, regulations and programs for a safe, efficient and environmentally friendly transportation system. A primary function of Transport Canada is the inspection and certification, directly or through its delegated classification societies, of vessels when they are in operation and at their annual refit.

Transport Canada inspectors focus on the safety of vessels and the certification and qualifications of ships' crews.

All of BC Ferries' vessels currently in operation have a Safety Inspection Certificate. At the time we were completing this follow-up report, November 2011, Transport Canada had 49 Safety Inspection documents citing deficiencies that required action by BC Ferries. None of the deficiencies noted compromise the safe operation of any vessel or were overdue for remediation.

External Auditor

As noted previously, BC Ferries has contracted with an external auditor to carry out ISM external audits to ensure that the company remains in compliance with all provisions of the ISM Code. There are two phases to these audits: a Document of Compliance audit, which relates to an audit of shore management processes; and a Safety Management Certificate audit, which relates to vessels.

BC Ferries currently has a Document of Compliance and a Safety Management Certificate for each vessel. At the time we were completing this follow-up report, November 2011, 11 non-conformities required action. None of these was overdue for remediation.

Transportation Safety Board

As we noted in Section 4.4, "Incident Reporting and Investigation", the Transportation Safety Board is an independent agency that investigates marine, pipeline, railway and aviation transportation occurrences. The Board reviews developments in transportation safety and identifies safety risks that it believes government and the transportation industry should address to reduce further injury and loss. Its role also is to respond quickly to transportation incidents and to conduct independent safety investigations. The Transportation Safety Board does not assign fault or determine civil or criminal liability as a result of the work it undertakes.

The number of investigations of incidents carried out by the TSB relating to BC Ferries' operations is shown in the Table 2 in Section 4.4, "Incident Reporting and Investigation".

6.3 Emergency Drills

Proficiency of staff and carrying out the drills

Well-executed fire and boat drills are an essential component of a marine safety system. The standard by which these are to be conducted and evaluated is contained in the Canada Shipping Act, the BC Ferries Fleet Regulations and in the ISM Code.

Fleet Regulations also require that an emergency drill log be maintained onboard each vessel and at each terminal and shore facility.

We noted in our 2007 report that the vast majority of crew members we interviewed indicated that employees were proficient in the performance of fire and boat drills. However, there were a number of concerns which included:

- the proficiency of some casual and seasonal employees in that they sometimes missed regularly scheduled drills;
- the level of proficiency in crowd management and control appeared to vary widely among catering department crews;
- lack of opportunity for marine evacuation chute training;
- the infrequent opportunity for some casual and seasonal staff to be involved in scheduled fire and boat drills;
- catering staff not being involved in fire and boat drills to any extent;
- lack of time allotted to conduct proper fire and boat drills; and
- lack of realism in many drills.

Monitoring for uniformity and standardization

In our 2007 report we concluded that, because of tight scheduling requirements, there was not always sufficient time for realistic and adequate fire and boat drills to be conducted. As a result, the requirements of the Canada Shipping Act and the company's own policies were not always being met. BC Ferries was not able to ensure uniformity and standardization in the conduct of drills.

In our review of terminal operations, we looked at the extent to which emergency drills were being carried out. It was the responsibility of the terminal supervisor to ensure drills were carried out as required. We noted copies of terminal drill schedules and standing orders for the execution of these drills. As part of its facility audit process, IVAG also verified that regular drills had been carried out.

We made three recommendations for improvement:

BC Ferries should:

- *ensure all operational personnel who have not participated in recent fire and boat drills are included on a regular basis;*
- *ensure sufficient time is provided to run complete fire and boat drills and therefore be in full compliance with federal regulations and the company's own policies; and*
- *institute a process to monitor and evaluate fire and boat drills system-wide to ensure uniformity and standardization of crew skills and proficiency throughout the fleet.*

We found the following in our follow-up review:

Ensuring that all operational personnel participate in recent fire and boat drills

In 2007 BC Ferries started a comprehensive review of operational safety which resulted in many recommendations and action plans for improvements. One of these recommendations focused on how drills should be improved and an action plan to deal with this issue. The action plan recommended various measures to improve the conduct and effectiveness of drills on vessels and terminals. It emphasized the importance of

ensuring that drills are carried out as though there was an actual emergency, of ensuring full compliance with applicable regulations, and of ensuring that sufficient time is provided to run complete fire and boat drills.

Also recommended was the creation of a team to deal with issues such as participation of casual staff in drills and ship-shore drills, exploring the possibilities of 'peer training' among drill leaders, using in-house staff to deliver the type of training provided by external groups and creating generic drill scenarios that can become the basis of ship-specific emergency scenarios over time. It also suggested utilizing passengers in drill scenarios and instituting a process to monitor and evaluate fire and boat drills system-wide to ensure uniformity and standardization of crew skills and proficiency.

In our follow-up review, we noted that some action has been taken to review the issues above, such as training component drills that would ensure that every crew member has been exercised at least once per month in their muster list of designated duties, reviewing drill tracking on board the ships, identifying opportunities for ship-shore emergency response, developing drill scenarios to address them, and considering revisions and improvements to the shipboard Marine Emergency Duties (MED) book system.

There was a general agreement by staff we interviewed that the drills are much better carried out than in the past: the quality of the drills is better; and sufficient time is allocated to the drills and for debriefing. However, the following problems were noted that still need to be resolved.

- There remains a problem with making sure that seasonal and casual employees participate in the drills. The MED books reviewed by the auditors to see if employees have participated in the required drills show gaps, and a substantial number of people still seem to fall through the cracks. There is no set policy for how often casuals and seasonals are to participate in the drills.
- Due to having a different shift pattern, not all engineers are participating in the drills. When the drills are carried out at the beginning of a shift, or at the end, they are in the engine room making preparations for starting or shutting down.
- The quality of the drills can vary substantially between ships and is not always up to standard.
- There is no oversight, or mechanism, in place to ensure that people are attending the required drills.
- There is no standardized form to record participation in the drills.
- The Engineering Superintendents do not have any information on whether staffing pool personnel that move from ship to ship take part in the drills. Nobody seems to be checking whether this is happening. The MED cards do not show all the staff participations.
- Job sharing personnel - for instance one working in the morning and one in the afternoon - also have problems with participating in the drills. When drills are done in the mornings, the afternoon employee cannot participate.

Much work remains to be done to identify and implement the improvements suggested in the recommendation.

Conclusion

Each of the three recommendations has been partially implemented.

7 Having the Right Emergency Equipment

To achieve appropriate operational safety, BC Ferries has to ensure that the appropriate emergency equipment is available and that the equipment is maintained so that it will function as required in an emergency. This equipment includes:

- fire detection and extinguishing equipment: fire alarms, sprinkler systems, fire hoses and pumps, fire extinguishers, and fire suits; and
- lifesaving equipment: marine evacuation systems, life jackets, life rafts, life boats and associated launching devices.

The requirements for emergency equipment are set down in the Canada Shipping Act, in approved standards set out by Transport Canada Marine Safety Branch, and in BC Ferries' own policies. To ensure that the right equipment is available at the right location and is properly maintained, BC Ferries' Internal SMS Verification Audit Group (IVAG) inspects the equipment during their periodic audits on the vessels and terminals to ensure that they meet the Canada Shipping Act and the company's requirements. Transport Canada and the company's external auditor, Lloyd's Register, also carry out inspections as part of their visits to the vessels. The results of these inspections are reported and deficiencies identified for correction.

In our 2007 review we found that BC Ferries' emergency equipment met the requirements of the Canada Shipping Act and the company's own requirements. Emergency equipment was purchased when needed and funded properly. As well, emergency equipment at terminals and on vessels to was considered to be well maintained. As a result we made no recommendation in this area.

We found the following in our follow-up review:

Staff we interviewed confirmed that the corporation's equipment continues to be of good quality and is well maintained. As well, new and better operational safety equipment has been purchased since the last review.

8 Reporting on Performance

8.1 Internal Reporting

The Board of Directors has established, as a Board committee, the Safety, Health, Environment and Security Committee with the mandate to:

- exercise due diligence over the safety, health, environmental, and security operations of the corporation;
- develop, review, and make recommendations, as required, on matters relating to the corporation's safety, health, environmental, and security policies and practices; and

- monitor compliance with government regulations and with the corporation's commitment to excellence on these issues.

Management and staff provide both the Safety Committee and the full Board with periodic comprehensive information on operational safety matters. This includes information on the:

- safety management system;
- Sailsafe program;
- status of the implementation of the recommendations of the 2007 independent safety review report;
- safety performance measures.

In our 2007 report we noted that the scheduling of Safety Committee meetings did not always give staff sufficient time before the upcoming Board meeting to fully research and deliberate on matters raised at committee. Accordingly, we made the following recommendation:

BC Ferries should have the Safety, Health, Environment and Security Committee review its meeting schedule and revise it if necessary to ensure it facilitated both committee and board discussion of safety-related matters on a timely basis.

We found the following in our follow-up review:

Pursuant to our recommendation, the Safety Committee has given consideration as to whether its meeting schedule should be revised. It has concluded that both the committee and the Board are receiving relevant, timely information and reporting on safety-related matters and that no revision in the scheduling of committee meetings is required.

Our review of minutes of Board of Directors and Safety Committee meetings held in recent years, and our discussions with the Board and Safety Committee chairs, indicate that the Safety Committee is providing, to the Board of Directors, timely and fulsome reporting of relevant safety-related matters.

Conclusion

The recommendation has been fully implemented.

8.2 External Reporting

In our 2007 report we noted that the combined BC Ferries and British Columbia Ferry Authority annual report includes information about achievements in the area of the four operational goals set out in the BC Ferries' one-year business plan. However, we found that this public information was not aligned with the tactics, measures and targets included in the corporate strategic and business plans. This made it difficult for the general public and corporate stakeholders to determine whether or not BC Ferries was successful in meeting its operational objectives, initiatives, goals and targets.

We made the following recommendation:

BC Ferries should ensure that its annual report includes appropriate information on the extent to which the company has achieved its operational safety objectives.

We found the following in our follow-up review:

As in prior years, BC Ferries and the British Columbia Ferry Authority, for fiscal 2010/11, issued a combined annual report. The report confirms BC Ferries' corporate mission of providing "safe, reliable and efficient marine transportation services..". As well, the first-mentioned core value is "Safety: Ensure that the safety and security of our customers and staff is a primary concern in all aspects of doing business".

BC Ferries lists five key goals, and states none is more important than safety. Its safety goal is "to continuously improve the safety of our operations inclusive of vessels, terminals and facilities", a goal that is also contained in the corporation's 2010/11 business plan.

In the discussion and analysis section of the 2010/11 annual report there is a section that comments on safety priority and risk under the heading of "Business Risk Management". In respect of risk mitigation there are references in that section to the commissioning of this review, the ongoing SailSafe program, food safety procedures, and internal and external safety audits.

We believe that the annual report to stakeholders is an important accountability document and, as such, should provide information as to corporate performance in all aspects of the corporation's operations, including its safety programs.

The BC Ferries 2011/12 corporate business plan, available on the BC Ferries website, includes performance measures relating to employee and passenger safety. For those two measures, there is included in the business plan a comparison of actual to target performances for the preceding three fiscal years, as well as the target performance goal for the 2011/12 fiscal year. It is important that the corporation's year-end annual report indicate to stakeholders the extent to which these performance targets have been achieved.

Currently included in the annual report is a brief reference to a reduction in employee time loss, but there is no indication as to whether that reduction met the company's performance target. There is no comment in respect of passenger injury. Consequently, there is no reporting to stakeholders in the annual report on the success, or otherwise, of BC Ferries in achieving its performance goals in respect of these two performance areas.

While there is some useful information contained in the BC Ferries annual report regarding the corporation's safety goals and programs, that information is not aligned with the strategies, tactics and performance measures set out in the corporation's annual business plan. Accordingly, it remains difficult for the general public and

corporate stakeholders to determine whether or not BC Ferries has been successful in meeting its annual operational safety objectives, initiatives and performance targets.

Conclusion

The recommendation has not been implemented.

9 Summary of the Status of the 2007 Report Recommendations

Recommendations	Status of Implementation			
	Fully	Substantially	Partially	No Action
<p>Strategic and Business Plans</p> <p><i>BC Ferries should:</i></p> <ul style="list-style-type: none"> • ensure that each of the corporate strategic and business plans includes a strategic objective/goal that pertains directly to the safety and security of customers and employees, and that applicable tactics, measures and targets are developed in regard to the achievement of that objective/goal; and • reinforce that operational safety is the company's number one priority, and that at no time should any other company objective take a higher level of priority. 	X			
<p>The Safety Management System</p> <p><i>BC Ferries should:</i></p> <ul style="list-style-type: none"> • carry out a comprehensive review of the Safety Management System (SMS) to determine which areas are functioning effectively and which areas need improvement; • improve existing training and orientation processes to ensure they are sufficient to increase knowledge and awareness of the SMS across the organization, especially among vessel Officers and Terminal Directors and Managers to ensure they have "bought into" the SMS; • direct the Internal SMS Verification Audit staff to monitor the level of buy-in to the SMS; • consider adopting a standardized uniform program for shipboard and terminal employees to make them easily recognizable by passengers; and • work cooperatively with the British Columbia Ferry and Marine Workers' Union to continuously improve the SMS and operational safety. 	X	X		

Recommendations	Fully	Substan- tially	Partially	No Action
<p>Policies and Procedures</p> <p><i>BC Ferries should:</i></p> <ul style="list-style-type: none"> • review all of its manuals to determine whether they can be consolidated to avoid duplication and to make them more user-friendly; and • ensure that both the human resources data base and the crewing operational area have up-to-date policies and procedures that clearly set out their roles and responsibilities relating to the effective functioning of the Safety Management System. <p>Risk Objectives, Identification and Analysis</p> <p><i>BC Ferries should:</i></p> <ul style="list-style-type: none"> • continue to review its corporate-wide Corporate Risk Register and ensure that all significant risks have been identified; • prioritize individual risks as to the likelihood of each risk occurring, and develop strategies for mitigating the risks; • ensure that risk management is integrated into the Safety Management System at all levels of the operations; • develop the appropriate policies, structure, approach and support tools for managing risk; and • use information from within BC Ferries and the marine industry to ensure that best safety practices are incorporated into BC Ferries' operations. 	<p>X</p> <p>X</p> <p>X</p>	<p>X</p> <p>X</p> <p>X</p>	<p>X</p> <p>X</p>	
<p>Voluntary Individual Safety Observation Reporting Process</p> <p><i>BC Ferries should:</i></p> <ul style="list-style-type: none"> • review the purpose of the Voluntary Individual Safety Observation Reporting System and determine whether the purpose for which the system was established can be met by other processes; and, if it cannot, then its current design should be reviewed with the intention of making it more useful; and • communicate the revised process throughout the organization and encourage its use. 	<p>X</p> <p>X</p>			

Recommendations	Fully	Substan- tially	Partially	No Action
<p>On-time Performance</p> <ul style="list-style-type: none"> • <i>BC Ferries should continue to communicate to operating staff that, in making decisions around on-time performance, operational safety will never be compromised.</i> 	X			
<p>Vessels Transiting Active Pass</p> <ul style="list-style-type: none"> • <i>BC Ferries should, as part of a formalized risk management process, undertake an assessment of the degree of risk associated with the current practice of allowing BC Ferries' vessels to transit Active Pass simultaneously.</i> 	X			
<p>Shift Handover</p> <ul style="list-style-type: none"> • <i>BC Ferries should review handover procedures and take appropriate action to ensure that consistent and proper watch handover occurs across the fleet.</i> 			X	
<p>Incident Reporting and Investigation</p> <ul style="list-style-type: none"> • <i>BC Ferries should provide key shipboard, regional operating superintendents, terminal and head office personnel with accident and incident investigation training to improve the effectiveness of these activities.</i> 	X			
<p>Dealing with Issues Arising from Audits and Inspections</p> <p><i>BC Ferries should:</i></p> <ul style="list-style-type: none"> • <i>continue with its efforts to ensure that all of the items in the Operations Safety Log are addressed in a timely manner; and</i> • <i>apply severity levels to the items in the Operations Safety Log, to focus attention of senior management and the Safety, Health, Environment and Security Committee on the serious safety-related issues that must be dealt with.</i> 	X X			

Recommendations	Fully	Substan- tially	Partially	No Action
<p>Crowd Management and Control (continued)</p> <ul style="list-style-type: none"> • <i>determine the minimum period acceptable between initial and refresher training in crowd management training, and initiate a program of refresher training consistent with that finding.</i> 			X	
<p>The Familiarization Process</p> <p><i>BC Ferries should:</i></p> <ul style="list-style-type: none"> • <i>review the familiarization process and ensure that it is carried out uniformly across the organization; and</i> • <i>ensure that the documented information provided in the familiarization process is standardized to the extent practicable.</i> 			X X	
<p>The Internal SMS Verification Audit Group</p> <p><i>BC Ferries should:</i></p> <ul style="list-style-type: none"> • <i>direct the Internal SMS Verification Audit Group (IVAG) to observe operational safety procedures and protocols to a greater extent, and to provide the Designated Person with information on safety issues for fleet-wide circulation; and</i> • <i>introduce surprise audits in IVAG's regular audit program.</i> 	X X			
<p>The Role of Superintendents, Terminal Directors and Managers in Operational Safety</p> <p><i>BC Ferries should ensure that:</i></p> <ul style="list-style-type: none"> • <i>superintendent inspections cover operational safety procedures and protocols and be documented as required; and</i> • <i>superintendents, and terminal directors/managers are provided with the necessary training to enable them to properly carry out their inspections and to promote the SMS at all times.</i> 			X X	

Recommendations	Fully	Substan- tially	Partially	No Action
<p>Emergency Drills</p> <p><i>BC Ferries should:</i></p> <ul style="list-style-type: none"> • <i>ensure all operational personnel who have not participated in recent fire and boat drills are included on a regular basis;</i> • <i>ensure sufficient time is provided to run complete fire and boat drills and therefore be in full compliance with federal regulations and the company's own policies; and</i> • <i>institute a process to monitor and evaluate fire and boat drills system-wide to ensure uniformity and standardization of crew skills and proficiency throughout the fleet.</i> 			<p style="text-align: center;">X</p> <p style="text-align: center;">X</p> <p style="text-align: center;">X</p>	
<p>Internal Reporting</p> <ul style="list-style-type: none"> • <i>BC Ferries should have the Safety, Health, Environment and Security Committee review its meeting schedule and revise it if necessary to ensure it facilitates both committee and board discussion of safety-related matters on a timely basis.</i> 	X			
<p>External Reporting</p> <ul style="list-style-type: none"> • <i>BC Ferries should ensure that its annual report includes appropriate information on the extent to which the company has achieved its operational safety objectives.</i> 				X