FINAL EVALUATION REPORT

EVALUATION OF THE MARINE COMMUNICATIONS AND TRAFFIC SERVICES (MCTS) PROGRAM

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ACRONYMS

ADM	Assistant Deputy Minister
C&M	Consolidation and Modernization
CCG	Canadian Coast Guard
DFO	Fisheries and Oceans Canada
ECCC	Environment and Climate Change Canada
FTE	Full-Time Equivalent
ITS	Integrated Technical Services
MCTS	Marine Communications and Traffic Services
MSI	Marine Safety Information
NHQ	National Headquarters
NOTSHIP	Notice to Shipping
O&M	Operations and Maintenance
QMS	Quality Management System
VTS	Vessel Traffic Services

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EXECUTIVE SUMMARY

Introduction

This report presents the results of the evaluation of the Marine Communications and Traffic Services (MCTS) program, conducted by the Evaluation Directorate of Fisheries and Oceans Canada (DFO), between April 2016 and February 2017. The program was assessed for its relevance, effectiveness and efficiency during fiscal years 2011-12 to 2015-16. The evaluation assessed MCTS activities at National Headquarters and all three Canadian Coast Guard (CCG) Regions: Western, Central and Arctic, and Atlantic. This is the first evaluation of the MCTS program.

Program Profile

MCTS is a national program delivered by the CCG, 24-hours per day, and seven days a week. It contributes to the safe and efficient navigation of vessels in Canadian waterways; the protection of the marine environment; and the safety of life at sea. MCTS officers provide vessel traffic services (VTS) to vessels transiting selected Canadian ports and waterways; and marine safety information (MSI) to all mariners in Canadian waters. MCTS officers work closely with a number of internal CCG partners and federal government stakeholders (e.g., Transport Canada, Environment and Climate Change Canada). Clients include international and domestic shipping companies, private businesses and recreational boaters. The program supports DFO's strategic outcome of Safe and Secure Waters as per the Department's 2015-16 Program Alignment Architecture.

Between 2011 and May 2016 the program underwent a Consolidation and Modernization (C&M) project, in which 22 existing MCTS centres were consolidated into 12 centres; and MCTS communication and operating systems were modernized. The project was accomplished in phases, in order to maintain full service coverage of coasts and waterways during the transition. On average, the program's actual expenditures for each of the past five fiscal years were $42 million: the program spent the most ($45.7 million) in 2012-13 and the least ($38.7 million), in 2015-16.

Evaluation Methodology

Evaluation questions were determined in compliance with Treasury Board's *Policy on Results* (2016) and were developed in consultation with senior program management.

The evaluation used the following methodologies to collect data about the program's relevance and performance:

- A review of documents (including program reports and plans, relevant audits, operational guides, and reports of the Senate Standing Committee on Fisheries and Oceans);
- Key informant interviews with MCTS program staff and internal CCG partners;
- A survey of external clients operating in all three CCG regions;
- Site visits to two regions (Atlantic and Western); and

- An international review of VTS and MSI services in Canada, the United States, Australia, United Kingdom and Finland.

The Evaluation Directorate encountered some limitations, including challenges in reaching MCTS users and non-CCG partners for the survey; limited access to some performance data; and the availability of public information about VTS and MSI services in other countries. The evaluation's conclusions and recommendations were based on the triangulation of multiple lines of evidence.

Evaluation Findings

The evaluation found that there is a continued need for MCTS information and services to support legislation and Canada's international commitments. MCTS delivers services that enable the CCG, on behalf of the Government of Canada, to fulfil its responsibilities, as mandated by federal Acts including: the *Constitution Act (1867),* the *Oceans Act (1996),* and the *Canada Shipping Act (2001)*. MCTS information and services align with several international conventions, and with Canada's international commitments to the International Maritime Organization and the International Hydrographic Organization.

Furthermore, the need for MCTS to support both commercial vessels and mariners will continue to increase to meet the growing demand for data and higher public expectations for enhanced safety and protection. The volume of marine traffic and commercial transportation has continued to increase, both domestically and internationally; as has the potential for high-impact marine accidents. The higher level of public scrutiny, particularly over the potential environmental and social impacts of major incidents creates higher expectations for enhanced safety and protection measures. Simultaneously, communication technology has developed at a rapid pace; nonetheless, the role of MCTS remains important in providing comprehensive marine data and in coordinating all communications in case of marine safety incidents.

With respect to the program's relevance, MCTS information and services provide the support users need to ensure their safe transit of Canadian waters. However, insufficient strategic direction has affected the program's ability to develop a long-term, forward-looking vision, which is important in such a rapidly evolving environment driven by technology. Increasing engagement and communication with external users and internal partners would improve the program's continued responsiveness.

The evaluation confirmed that it is appropriate for the federal government to deliver the MCTS program. By providing vessel traffic and safety functions through one government program, MCTS has access to all relevant data sources, and can deliver the most comprehensive picture of the marine situational environment at any given moment. There are also strong arguments that there are no feasible alternative leads for delivering MCTS services.

MCTS program clients and internal CCG partners are satisfied with the quality of the program's information and services, which are timely, accurate and accessible. No significant changes were found in the quality of the MCTS services in the past five years, despite the transformations undergone by the program in this time. The few gaps in service quality that were perceived by

survey respondents were associated with the C&M project. Minor quality issues that were identified appear to be transitory in nature.

The MCTS program completed the major modernization of its technological systems and consolidation of its centres, while maintaining its provision of services with almost no impact to mariners. The newly-implemented systems are more flexible and can be customized to meet different operational needs. The program is now well-positioned to respond to evolving demands for services.

The MCTS program reduced its total expenditures and number of Full-Time Equivalents (FTEs) over the last five years, while maintaining the same level of service. In 2015-16, the MCTS program spent overall $3.3 million less than in 2011-12. Likewise, in 2015-16, the program reduced the number of FTEs positions by 48 when compared with the 2011-12 figures. However, over the last two years there was an increase in salary overtime costs.

Although MCTS was found to operate in an efficient and cost-effective manner, MCTS centres are under-staffed. Under-staffing is the primary challenge to the program's efficiency and economy, and it will increase in the next few years. The MCTS program will need to work with the CCG College to develop a long-term strategic staffing plan for the program.

Other factors were found to affect the MCTS program's efficiency, including:

- The Marine Weather Broadcasting service duplicate the work of Environment and Climate Change Canada in most areas; and
- The absence of MCTS National Program Specialists to support the program's operations between 2012 and 2016, which has resulted in the program's inability to update its standards and procedures on an ongoing basis; and in a lack of clarity regarding the roles and responsibilities between National Headquarters and the regions. The MCTS program is currently implementing a national quality management system (QMS), which is expected to address these issues, as well as to improve significantly the national coherence of the program and the quality of MCTS services to its clients.

Recommendations

Based on the findings of the evaluation, three recommendations are being made.

Recommendation 1: It is recommended that the Deputy Commissioner, Operations develop and implement a sustainable staffing strategy to address the short, medium, and long-term staffing needs of the program.

Recommendation 2: It is recommended that the Deputy Commissioner, Operations consult with Environment and Climate Change Canada (ECCC) to investigate whether there is any duplication in weather broadcasting services delivered by MCTS and ECCC; if duplication exists, it is recommended that this be addressed jointly.

Recommendation 3: It is recommended that the Deputy Commissioner, Operations pursue the implementation of the national quality management system to ensure that MCTS operational guidelines and procedures are standardized and applied nationally.

1.0 INTRODUCTION

1.1 Purpose of the Evaluation

This report presents the results of the evaluation of the Marine Communications and Traffic Services (MCTS) Program conducted by the Evaluation Directorate within Fisheries and Oceans Canada (DFO). In accordance with Treasury Board's *Policy on Results (2016)*, the main objective of the evaluation was to examine the relevance, effectiveness and efficiency of the program.

1.2 Evaluation Scope and Context

The evaluation began in April 2016 and concluded in February 2017. The evaluation covered a five year period, from fiscal years 2011-12 to 2015-16, and included National Headquarters (NHQ) and all three Canadian Coast Guard (CCG) Regions: Western, Central and Arctic, and Atlantic. This is the first evaluation of the MCTS program, and the program has not been audited since 2010.

The performance of the MCTS program was examined in light of the significant transformation it underwent between fiscal years 2011-12 and 2015-16. Likewise, the evaluation team was mindful of the impact that the changing technological environment had on the program.

2.0 PROGRAM PROFILE

2.1 Program Context

The MCTS is a national program delivered by the CCG, 24-hours per day, seven days a week, which contributes to the safe and efficient navigation of shipping in Canadian waterways; protection of the marine environment; and the safety of life at sea.

The MCTS program provides vessel traffic services (VTS) to vessels transiting selected Canadian ports and waterways; and marine safety information (MSI) to all mariners in Canadian waters. MCTS officers provide navigational information and regulate vessel traffic; screen vessels entering Canadian waters in support of Transport Canada; monitor marine distress calls; coordinate safety response operations; broadcast marine weather information; broadcast maritime safety information; communicate marine incidents to response partners; and manage a marine telephone call service.

The MCTS Program supports DFO's strategic outcome of Safe and Secure Waters as per the Department's 2015-16 Program Alignment Architecture.

The program began a Consolidation and Modernization project in 2011-12, which consisted of consolidating 22 existing MCTS centres into 12 centres and modernizing MCTS technology. The

project was accomplished in phases, so that full coverage of coasts and waterways could be maintained. The last MCTS centre to be consolidated was closed in May 2016.

2.2 Program Resources

In 2015-16, actual program expenditures (salary and operations and maintenance) were $38.7 million (Table 1).

Table 1: Actual Expenditures by type for the MCTS Program, 2011-12 to 2015-16

Expenditure Type	2011-12	2012-13	2013-14	2014-15	2015-16
Salary	$35,614,000	$40,352,300	$33,265,400	$32,878,600	$32,100,100
O&M	$6,337,400	$5,316,400	$5,738,600	$6,485,400	$6,572,400
Total	**$41,951,400**	**$45,668,700**	**$39,004,000**	**$39,364,000**	**$38,672,500**

*Excludes voted-net revenues.

Other investments not covered under MCTS expenditures, which directly contributed to the program include the following:

- $166.5 million in planned expenditures (period unknown) for shore-based assets refurbishment and new investments, with funding provided through the Shore-Based Assets program;
- $39.5 million in actual expenditures from 2011-12 to 2015-16 for the modernization of the Communication Control System, with funding provided through Integrated Technical Services (ITS);
- $5.6 million in actual expenditures from 2011-12 to 2015-16 to implement the Continuous Marine Broadcast system to improve the delivery of marine weather broadcasting, with funding provided through ITS; and
- $8.0 million in actual expenditures from 2011-12 to 2015-16, to manage and upgrade the networks and systems as part of the consolidation project, with funding provided through ITS.

2.3 Program Partners and Stakeholders

The MCTS program is an important contributor to the marine safety system in Canada. MCTS officers work closely with a number of internal CCG partners (e.g., Environmental Response program, Search and Rescue program) and stakeholders (e.g., Transport Canada, Environment and Climate Change Canada).

The clients of the MCTS vessel traffic services and marine safety information include:

- International and domestic shipping companies;
- Private businesses (e.g., cruise vessels, ferry operators); and
- Mariners (e.g., anyone on the water such as fishermen, recreational boaters, etc.).

3.0 EVALUATION METHODOLOGY

3.1 Evaluation Approach and Design

The evaluation of MCTS focused on an assessment of the program's information and service quality, its relevance to users, and the efficiency that it has achieved, in alignment with senior management's needs and Treasury Board's *Policy on Results*. Extensive use of triangulation was used as an analytical method, where multiple lines of evidence helped corroborate findings.

The evaluation matrix is provided in Annex A.

3.2 Data Sources

Existing administrative and financial data was used to undertake the evaluation, and supplemented with additional data sources, where required.

In addition, the following methodologies were utilized:

- A review of key program documents and files;
- A review of relevant audits and recent reports, including operational guides, and reports of the Senate Standing Committee on Fisheries and Oceans;
- Key informant interviews with MCTS program staff (n=33) and internal CCG partners (n=19);
- A survey of external clients across all three CCG regions (n=107);
- An international review of VTS and MSI services in Canada, the United States, Australia, United Kingdom and Finland; and
- Site visits to the Western and Atlantic regions.

3.3 Methodological Limitations and Mitigation Strategies

Although the evaluation encountered some limitations that are outlined below, these limitations were mitigated, where possible, through the use of multiple lines of evidence and triangulation of data. This approach was taken in order to demonstrate reliability and validity of the findings and to ensure that conclusions and recommendations are based on objective and documented evidence. Details on limitations and mitigations can be found below in Table 2.

Table 2: Evaluation Limitations, their Impacts on the Evaluation's Results and Mitigation Strategies

Limitations	Mitigation Strategies
Challenges reaching MCTS users and non-CCG partners, given the way that the program is delivered.	The MCTS program's delivery model, which includes broadcasting information to mariners, does not always allow MCTS to identify each and every user. In order to survey MCTS users and partners, the evaluation team was required to use a survey distribution strategy that fit the program context. The survey was distributed online to specific categories of users (e.g., ports, pilotage corporations), who were asked, in turn, to distribute the survey to their members, colleagues and to any other organization or person that they thought may use MCTS information and services. In order to ensure that the right population was surveyed, questions were added to the survey to filter out respondents who did not use MCTS information and/or services. An analysis of survey respondents demonstrated that the survey reached a diverse group of users and partners. The survey population is further discussed in Annex B.
Access to a limited amount of administrative and performance data.	Administrative data about the number and duration of service outages and performance data about the level of services were not provided to the evaluation team. One reason provided by the program was that it was challenging to retrieve data stored in the program's previous systems in some regions. With regards to service outages, a few interviewees and survey participants noted that service outages occurred during the Consolidation and Modernization project. In the absence of a comprehensive list of occurrences, it was not possible to fully assess the extent to which this issue had an impact on service delivery. The program provided data post-consolidation (i.e., since August 2016), which showed that five service outages occurred during this period, mainly as a result of reasons outside of the program's control. Although pre-August 2016 data were not available, the evaluation concluded that these outages had a limited impact on the delivery of services, given the high level of satisfaction reported by survey participants.
Limited availability of public information about comparable VTS and MSI services in other countries.	The international comparison study yielded limited results, because publically-available information on similar programs in other countries was limited. The differences in program delivery models also created challenges in providing a comparative analysis of MCTS's relevance and performance.

4.0 FINDINGS

4.1 Relevance

Key Finding: Legislation and Canada's commitments to international conventions support a continued need for MCTS information and services. The need for MCTS support will continue to increase in response to increased demand for data and higher public expectations for enhanced safety and protection.

4.1.1 MCTS Legislative Mandate

MCTS delivers services that enable the CCG, on behalf of the Government of Canada, to fulfil its responsibilities, as mandated by several federal Acts, including: the *Constitution Act (1867),* the *Oceans Act (1996),* and the *Canada Shipping Act (2001).* The provision of MCTS information and services also aligns with international conventions, including the Safety of Life at Sea Convention, and the International Association of Marine Aids to Navigation and Lighthouse Authorities' standards. MCTS is the only authority to issue national-standard NOTSHIPs in Canadian waters.[1] Since 2010, MCTS has also fulfilled Canada's international responsibilities to the International Maritime Organization and the International Hydrographic Organization by providing national coordination for two navigation zones in the Arctic.[2]

4.1.2 MCTS Role in Support of Canada's Marine Safety System

MCTS is a key enabler within the Canadian marine safety system; and the safety of Canada's waterways is essential to the growth of the Canadian economy.

MCTS information and services play a key role in preventing and addressing marine occurrences. Significant and enduring marine risk factors, such as ocean and weather conditions and traffic density and volume, mean that mariners will always need services related to vessel traffic and safety at sea.

MCTS support is also critical for the Canadian marine transportation sector, which is a strong contributor to the national economy; consequently, addressing and preventing risks related to activities such as marine trade, recreational boating, ferry

The Canadian Marine Transportation Sector in Numbers

- 53% of the Canada's GDP in 2011 was generated by trade
- Over 90% of trade by volume travel by ship
- 311.2 million tonnes of cargo, worth $162 billion, was shipped through Canadian ports in 2014
- 43% of Canadian adults (approximately 12.4 million people) participated in recreational boating in 2015, and accounted for about $3 billion in total sales;
- 259 ferries transported almost 54 million passengers, more than 19 million vehicles and billions of dollars' worth of goods in 2014
- Cruise ship tourists injected over $250 million into the local economy of Vancouver in 2014, and about $50 million each year into Halifax.

[1] CCG, *Notice to Shipping (NOTSHIP) Review*.
[2] CCG, *Integrated Business and HR Plan*, 2012-2015; Office of the Auditor General of Canada, *Report of the Commissioner of the Environment and Sustainable Development*, Fall 2014.

transportation or cruise shipping industry is of high importance for Canada's economic prosperity. Marine accident rates, ship losses and fatalities have decreased overall since 2011, despite a slight increase in the volume of vessel movements in Canadian waters and the tonnage of cargo handled in Canadian ports. The marine transportation sector's well-developed regulatory and operational environment, guidelines and best practices, are supported directly or indirectly by the MCTS program, and are believed to have contributed to the steady decrease in Canada's marine occurrence rates.

The volume of marine traffic and commercial transportation is expected to continue to increase in future, both in Canada and internationally. The need for MCTS services is expected to increase reflecting the trends of increase in the marine transportation sector. Domestically, there has been an increase in recreational boating and ferry traffic, which is expected to continue, in part as a result of longer navigation seasons. World seaborne trade is projected to almost double by 2030, compared to 2014.[3] Other factors that suggest the steady increase in volume of marine traffic include the development of very large vessels (e.g., cargo ships including container ships); the growth of commercial shipping in the Arctic; and several rapidly growing markets and trade demands.

Recent studies on marine safety and risks have concluded that the greater size of cargo ships and the increased shipment of oil and hazardous cargo will generate new safety concerns, such as areas of risk concentration, salvage challenges, and potential losses in the event of a major accident.[4] The higher level of public scrutiny due to these increased risks and the potential environmental and social impacts of major incidents creates higher expectations for enhanced safety and protection measures.

4.1.3 Users' Perceptions of Current and Emerging Needs for MCTS

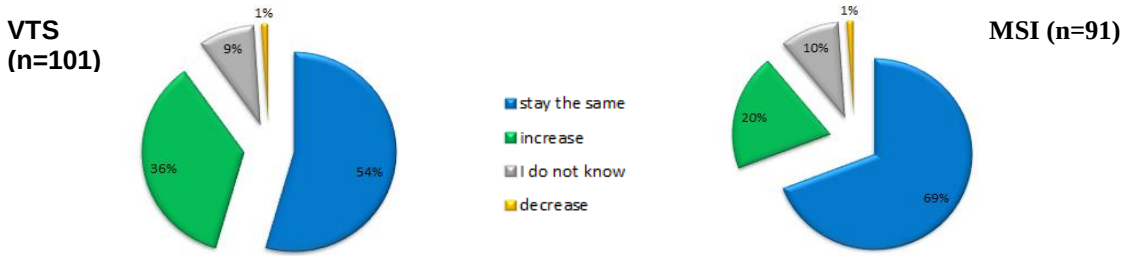
According to more than 90% of the users of VTS and MSI information and services consulted as part of the evaluation, there is a need for the program.

Figure 1, on the following page, illustrates the views shared by survey respondents about the direction, in which they believe that their need for MCTS VTS and MSI information and services will evolve in the near future. The majority of users believe that the need will remain steady or increase over the next five years. Very few survey respondents believed that the need for MCTS information and services will decrease.

> "MCTS is the first line of defense in marine safety and protecting economy and environment. It will be needed as long as there are people on water."
> (Internal interviewee)

[3] Transport Canada, *Pathways: Connecting Canada's Transportation System to the World*, 2015.
[4] Council of Canadian Academies, *Commercial Marine Shipping Accidents: Understanding the Risks in Canada*, 2016.

Figure 1: How will the need for MCTS change in the next five years? (Survey)



One argument proposed by those who feel that the need for MCTS will decrease is that technological advancements represent a challenge to the future role of MCTS, as the program relies predominantly upon traditional communication means such as VHF radio to provide part of its information and services. Mariners may feel that they are more self-reliant than before, since they have access to some marine safety and navigation information through alternate means of communication (e.g., cell phones, Global Positioning System (GPS), Automatic Identification System (AIS)).

In fact, administrative data confirm that mariners have been increasingly using other means of contact (e.g., cell phone calls to 911) to access emergency services, bypassing MCTS centres. From 2011 to 2015, MCTS was the first point of contact for approximately 50% of all marine accident calls received from mariners. Nonetheless, the MCTS operational directives require that MCTS be notified first in case of marine emergencies; and MCTS be solely responsible for handling all radio transmissions and procedures, use of alarm signals, and ship-shore communication. There are valid reasons for these directives: with MCTS officers in charge of all communications, rescuers are free to respond to emergencies at sea. This coordinated system ensures the quickest and most effective response to exceptional marine occurrences and Search and Rescue incidents. MCTS is required by law to coordinate all communication in the case of marine safety incidents regardless of what means of communication was used to signal the distress situation.

Additionally, radio communication was found to present several advantages over alternative means of communication. First, alternative means of communication, such as cell phones, are not a good substitute for a marine radio in distress situations. More specifically, cell phones may lose reception, get wet or damaged, and calling from a cell phone does not alert nearby vessels about the distress; and some cell phone signals cannot be followed back to the location by rescuers.[5] Second, there are geographical regions where the VHF radio is the only communication means, due to limitations of technology.

[5] *Safe Boating Guide for Pleasure Craft Mariners*.

4.1.4 Alignment of MCTS with the Current and Evolving Needs of Users

Key Finding: The MCTS program is responsive to the current needs of users, and provides the support they need to ensure safe transit of Canadian waters.

Overall, MCTS information and services are in alignment with the current needs of MCTS VTS and MSI users. Most of the interviewees stated that users have the support they need to ensure safe transit of Canadian waters; they considered that VTS provides preventive support, and MSI provides responsive support. Internal (CCG) partners were appreciative of several program strengths that were very useful to them, such as the contribution of MCTS officers' tools and expertise to the shared effort involved in ensuring safe transit; the 24/7 service offered by MCTS; and MCTS experience and competencies required to provide NOTSHIP information.

Over 70% of survey respondents corroborated interviewees' opinions and reported that they rely frequently or all the time on MCTS VTS and MSI services. The vast majority of them believed that MCTS VTS and MSI information and services were "very important" or "important" to vessels' safe passage on Canadian waters.[6]

The evaluation identified two main barriers that could negatively affect the program's ability to address the evolving needs of its clients and partners. The two barriers are:

1. **Limited engagement and communication with external clients and CCG partners:** Issues related to insufficient communication and engagement with clients are not unique for the MCTS program and could be traced back to 2009-2010, when the improvement of client services was identified as one of the top priorities for the CCG. A 2010 internal audit of the MCTS program also found that regions engaged clients and partners only on an ad hoc basis. At that time, a Client Engagement Strategy was already under development by the MCTS program. The evaluation team did not find any evidence of the implementation of this strategy during the period 2011-2016. Recent evidence suggests that the same issues persist as of July 2016. Feedback from interviewees and a few survey participants indicated that there was room for improvement with regards to the communications between the program and its clients. CCG partners involved in the marine safety system also noted that all CCG programs were working in silos and that increased exposure to the operational environment of the CCG partners would increase the program's ability to better serve their needs.

2. **Lack of strategic direction for the program:** The evaluation found that the lack of strategic direction for the program is affecting its efforts to develop a long-term, forward-looking vision. This was reported to be particularly challenging due to the environment, in which information and communication technologies evolve rapidly, and mariners have different levels of tolerance to technological changes (i.e., from early adopters to those who are resistant to the adoption of new technologies), and therefore, different needs with respect to technology. In many countries and in Canada, since the 2000s there have been large-scale changes related to the design and delivery of MSI and VTS services. A comparison of five countries, conducted for the MCTS evaluation, found that the key drivers for these changes

[6] 99% of respondents for VTS; and 96% for MSI.

included: (i) countries' efforts to align themselves with international conventions; (ii) changing technological capabilities, which enabled greater efficiencies; (iii) a continued increase in the globalization of trade and travel, which has required adaptations in the management of vessel traffic in large commercial ports; and (iv) a move towards international coordination of data for marine safety and search and rescue. [7]

The Consolidation and Modernization project has aligned Canada with the evolving reality of the marine transportation sector. Now that the project is complete, a few interviewees noted that it will be critical to establish a vision for the program to ensure that MCTS defines its specific role within the changing marine safety environment and remains responsive to the needs and expectations of its clients and partners. The development of a strategic vision for MCTS was reported to be primarily carried on by the CCG Operations, even though the CCG Concept of Operations (2012) document explicitly assigns this responsibility to CCG National Strategy. Internal interviewees noted that although discussions are taking place between the two groups, especially within the context of several strategic projects[8] led by the CCG National Strategy, more could be done to develop a clear and coherent vision for MCTS. It was mentioned that the lack of MCTS national program specialists over the last years explains the current situation.

4.1.5 The Role of the Federal Government in Delivery of the MCTS Program

Key Finding: In Canada, MCTS functions are best provided by the federal government. The privatization of MCTS functions is not feasible or advisable at this time.

The role of the federal government in delivering the MCTS program is appropriate, based on strong evidence from documents and literature. In particular, the 2014 Report of the *Commissioner of the Environment and Sustainable Development* recalls that "the federal government has responsibilities and accountabilities for managing risks to the marine environment and for supporting safe and efficient navigation….Transport Canada is…the lead authority for the *Canada Shipping Act, 2001,* which includes regulations requiring inspection of vessels and reporting by ships. Transport Canada enforces these regulations with the support of Fisheries and Oceans Canada's Canadian Coast Guard Marine Communications and Traffic Services by screening ships and conducting surveillance over Canadian waters to minimize risks and identify marine incidents"[9].

Findings from the international comparative study also confirm the importance of the central government in the administration of marine safety. In fact, in each of the four foreign countries that were examined as part of the study, there is a designated federal/central government agency/department responsible for providing both VTS and MSI, as per international standards. There are, however, differences in the delivery model and the regulation of VTS and MSI across the countries. For example, private-public partnerships in the management of ports and harbours and VTS services were found in United Kingdom and Australia; while the majority of VTS

[7] The study compared VTS and MSI service provision and technologies in Canada, the United States, United Kingdom, Finland and Australia.
[8] Such as: Northern Marine Transportation Corridors Initiative; Modern Marine Navigation System Initiative, etc.
[9] OAG, *Report of the Commissioner of the Environment and Sustainable Development*, Fall 2014, chapter 3.

services in ports and harbours continue to be controlled by federal agencies in Finland, Canada and the US.

The evaluation sought to answer the question whether any potential feasible alternatives exist for delivering some of the MCTS service, and whether there are components of the program that could or should be conducted by other organizations. Most of interviewees were of opinion that in Canada, MCTS functions are best delivered by the federal government and that at this time there are no feasible alternatives in terms of the delivery model. First, they argued, having one federal program deliver both vessel traffic and safety functions allows easy access to all relevant data sources, which deliver the most comprehensive and complete picture of the marine situational environment at any moment. Second, the current business model does not have a realistic alternative: the program is provided in the public interest for the safety of Canadians; and coverage for some areas (e.g., the North, smaller inlets in the Atlantic) would not be lucrative for private business.

4.2 Program Performance

Key Finding: MCTS program clients and internal CCG partners expressed a strong level of satisfaction with the quality of the program's information and services.

Both the survey and interviews revealed that MCTS clients and partners are very satisfied with the quality of MCTS VTS and MSI information and services.[10] Over 70% of survey respondents were 'satisfied' or 'very satisfied' with the timeliness, accuracy and accessibility of both VTS and MSI services. Likewise, the majority of CCG partners who were interviewed believed that MCTS services were timely, accurate and accessible.

When asked whether there had been a change in MCTS information and service quality over the past five years, just over half of all respondents believed that the quality of VTS information and services had not changed or had improved; while just under one third believed that the quality had declined. For MSI information and services, over half believed that the quality had not changed; while less than a quarter of respondents believed that the quality had declined.

When asked how quality could be improved, respondents commented about some perceived gaps in service quality, many of which were also mentioned by interviewees. These included:

- Inaccuracies in VTS and MSI information provided (e.g., missing information in reports to partners, less precise weather information);
- Lack of timeliness in VTS and MSI information provided (e.g., traffic information and NOTSHIPs not being updated frequently enough);

[10] The quality of MCTS services was assessed by asking survey respondents to provide their level of satisfaction (on a scale from 0 (not at all satisfied) to 4 (very satisfied) for the timeliness, accuracy and accessibility of the VTS and MSI information and services provided by the program. Survey respondents were also asked to comment about whether the quality of MCTS information and services had changed over the last five years. Participants selecting at least one rating less than 3 were given the option to provide suggestions on how the quality of information and services could be improved.

- Inconsistencies and a lack of standardization in the format of messages and reports (e.g., an inconsistent level of detail in messages about port/harbour traffic from one day to the next, varying NOTSHIPs and interpretations of incident categories).

The difference between clients' high level of overall satisfaction (73%-74%) and the percentage of clients who noted that the quality of both VTS and MSI information and services had declined (30% and 19%, respectively), may indicate a slight dissatisfaction with issues that can be linked with the impacts of the Consolidation and Modernization project, and are transitory in nature.

For example, survey respondents frequently attributed perceived errors made by MCTS officers such as inaccuracies, inconsistencies or a perceived lack of knowledge to 'new' or inexperienced MCTS officers or to a "loss of local knowledge". However, there was no evidence to suggest that the quality of MCTS information and services had decreased significantly as a result of the consolidation. One explanation for these perceived gaps in service quality is that MCTS officers and centres are still adapting to the significant changes that took place over the last four years (i.e., need to learn new geographical areas and technologies at the same time). One element that could explain these observations pertains to the fact that all MCTS officers have had to be trained on the new geographical areas of consolidated MCTS centres, and that these officers may not all have the same breath of experience for specific areas. This is something that should be addressed once all training is completed and officers get familiar with the new areas covered by their center.

Key Finding: The MCTS program implemented the major modernization of its technological systems and consolidation of its centres, while maintaining its provision of services with almost no impact to mariners. The program is now well-positioned and has the flexibility to implement future technological improvements, and to respond to evolving demands for services.

Between 2010-11 and 2015-16, the MCTS program completed its Consolidation and Modernization project (C&M) to consolidate centres and modernize technology. Throughout the project, MCTS officers continued to provide the same services to partners and clients; and where possible, modernized the delivery of some services, in order to achieve efficiencies. The newly-implemented systems are more flexible and very customizable to meet various operational needs. They have modern functional capabilities (such as graphical user interface, text-to-speech function), and are forward-compatible, which allows future expanding and upgrades of the network and other systems, using the opportunities provided by advanced communication technologies.

According to almost two thirds of interviewees, the program was successful in completing the project of such level of complexity and magnitude, while maintaining the required levels of service and not compromising marine safety.

> "MCTS officers have proven once again their ability to perform their duties to the highest levels of competence while navigating through all the changes to their work flow and workflow interruptions that such projects bring to 24/7 operations."
>
> (MCTS Consolidation and Modernization Update, 2016)

Interviewees identified several important achievements of the project, including the increase of the program's capacity to provide more consistent program delivery, more reliable service, and more effective and efficient use of the available resources. Although it is too early to assess the entire range of these achievements, there is a consensus among program staff that the new equipment is more effective, and will be easier to operate once all staff is trained.

A few challenges and issues experienced by MCTS during the transition were noted by survey respondents and interviewees:

- **Technical challenges**: There have been continued technical problems at the consolidated MCTS centre in Iqaluit; and survey respondents noted poor audio quality related to issues with the equipment;
- **Service outages**: These have occurred on both the West and East coasts, including a few wherein all communications between vessels and MCTS centres ceased.
- **HR-related challenges**:
    - More retirements and requests for assignment than expected;
    - Significant training requirements to adapt to new geographical areas and new technology increased MCTS employee stress and workload;
    - Change management challenges and issues (e.g., communication between management and employees during the transition could have been better); and,
    - Relocations, implementation delays, training and workload challenges, which were reported to have affected employee morale.

The program has addressed these challenges, wherever possible. As of November 2016, the program was finalizing activities that will resolve the technological problems in Iqaluit, and there is an ongoing project that will provide more redundancy to avoid system blackouts (i.e., a project led by ITS, where centers will be integrated into the same network). With respect to service outages, the evidence available suggests that the program is addressing all service interruption cases, and has always used mitigation strategies to ensure coverage of search and rescue zones.[11] With respect to HR-related challenges, the CCG is actively involved in addressing these issues with the CCG College.

4.3 Economy and Efficiency

4.3.1 Utilization of resources

Key Finding: The MCTS program reduced its total expenditures and number of FTEs over the last five years, while maintaining the same level of service. There is an opportunity for increased savings by reducing overtime costs.

Between 2011-12 and 2015-16, the MCTS program reduced its actual expenditures and FTEs, while providing the same range of services to its clients and partners. In 2015-16, the MCTS

[11] Mitigation strategies for outages include the use of CCG Fleet vessels and on occasion United States Coast Guard, as well as other mariners over VHF frequencies, to be the MCTS centres' eyes and ears during brief outages, should they occur.

program spent $3.3 million less overall than in 2011-12, with a very limited impact on external clients and stakeholders.[12] Between 2011-12 and 2015-16, the MCTS program reduced the number of Full-Time Equivalents (FTEs) by 48 (Table 3).

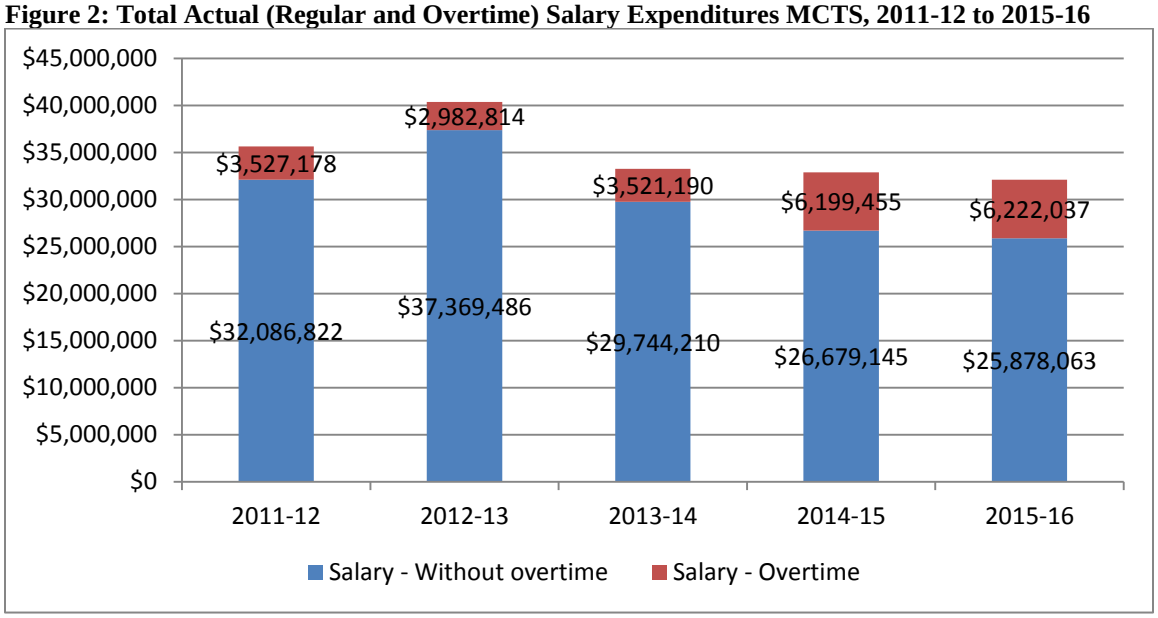
Table 3: Total number of FTEs* by region, 2011-12 to 2015-16

Region	2011-12	2012-13	2013-14	2014-15	2015-16
Western	120	121	120	120	105
Central and Arctic	146	146	146	138	113
Atlantic	97	98	93	90	100
NHQ	6	6	2	2	2
Total	**368**	**371**	**361**	**351**	**320**

*Based upon the MCTS program's organizational chart. Numbers have been rounded.

Figure 2 demonstrates the changes to the salary expenditures (total actual - regular and overtime) from 2011-12 to 2015-16.

Figure 2: Total Actual (Regular and Overtime) Salary Expenditures MCTS, 2011-12 to 2015-16



Although the data show that the total salary expenditures were reduced between 2011-12 and 2015-16 (from about $35.5 million to about $32 million), it is also evident that over the last two years there was an increase in the salary overtime costs. This can be primarily explained by costs associated with the on-the-job training of employees, which resulted directly from the consolidation of the operations and the need for re-certification of officers for new locations. The other factors that have contributed to this increase will be further discussed in the next section.

[12] Between 2012 and 2016, the MCTS program was in transition. The evaluation focused on a comparison between pre-and post- C&M resource levels (e.g., differences between the levels in fiscal year 2011-12 and fiscal year 2015-16), with limited attention to the yearly variances during fiscal year 2012-13, 2013-14 and 2014-15, given the significant changes that were taking place during these three years.

In terms of O&M costs, the data revealed savings of approximately $0.6 million in 2015-16 compared to 2011-12. However, when employee relocation costs are excluded from the analysis, the savings for the same period were approximately $1.5 million.

Most of the program interviewees (100% of the head-quarters' staff and 55% of the regional staff) agreed that the MCTS has, for the most part, enough funding to operate. It was noted that the program and the staff could benefit from additional resources for training, and opportunities for collaboration and practice exchange. Interviewees corroborated the financial data showing the impact of increased overtime cost on the efficiency of the program during the consolidation and modernization.

4.3.2 Understaffing

Key Finding: Under-staffing of MCTS centres is the primary factor that continues to impact the efficiency and economy of the MCTS program.

MCTS centres have suffered from a staffing gap, which has impacted the effectiveness and efficiency of MCTS services, for over a decade.[13] The impacts of the gap were exacerbated by the significant organizational changes and modernization of technologies that took place under the Consolidation and Modernization project. As of November 2016, the program was operating with 42.5 vacant positions (Table 4). [14]

Table 4: MCTS - Unoccupied FTE Positions, by Type and by CCG Region, as of November 2016.

Region	Vacancies	Leave	External Assignments	Internal Assignments	Actual Shortage
Western	6.0	6.0	2.0	0.0	14.0
Central & Arctic	12.5	9.0	0.0	6.0	15.5
Atlantic	4.0	5.0	5.0	1.0	13.0
Total:	**22.5**	**20.0**	**7.0**	**7.0**	**42.5**

Note: Vacancies are seasonal and full-time positions; Leave includes sick leave, maternity and leave without pay. External assignments (e.g., language training) are matched by the number of internal assignments (e.g., acting positions within MCTS).

Some of the impacts of understaffing upon MCTS centres and MCTS officers, reported by interviewees, included:

- Increased workload;
- Stress, burn-out and low morale among employees;

[13] Canada, Senate Standing Committee on Fisheries and Oceans, *First Report on Canadian Coast Guard Marine Communications and Traffic Services*, 2003; CCG, *2010-11 Corporate Risk Profile*; CCG, *Workload Study*, 2011.
[14] The staffing gap is based on the 302 positions available in the program's 2016-17 organizational chart. This means that there were 259.5 FTEs working for the program in November 2016.

- Increasing overtime costs since 2012: overtime expenditures rose to over $6 million in 2015-16 (Figure 2, above)[15];
- Lack of time to update regional and centre-specific guidelines and manuals for procedures; lack of flexibility/time for professional development activities;
- A decreased number of watch officers in busy centres, which may increase the risk of missing distress calls;
- Managers being overwhelmed with administrative tasks, such as scheduling and pay system issues, which has resulted in less time for quality management; and,
- Supervisors filling in for MCTS officers' shifts, which may result in supervisors not being able to perform their own job requirements/duties.

In addition to MCTS' current staffing gap, two other factors will likely have an impact on the demand for MCTS officers. First, as of November 2016, more than one-third of the MCTS program's workforce is eligible for retirement in the next five years. Second, increasing the current staffing level to 6.0, as suggested by MCTS management as a measure to improve the program's efficiency, will require an additional 24 FTEs. The MCTS program will need to work with the CCG College to develop a long-term strategic staffing plan for the program.

4.3.3 Potential duplication

Key Finding: While Marine Weather Broadcasting is an essential service provided by MCTS, the activity duplicates the work of Environment and Climate Change Canada.

Marine weather broadcasting is one of the longtime services delivered by MCTS to mariners; it is delivered in partnership with Environment and Climate Change Canada (ECCC), which supplies the content of the broadcasts. Based on the 2010 Workload Study, the weather broadcasting represented about 10 to 20 percent of the overall MCTS workload. As part of modernization, the CCG invested approximately $5.0 million in Continuous Marine Broadcasting, a text-to-speech system that automates part of the tasks associated with this service. Several interviewees noted that in most areas, the weather broadcasting service duplicates the work of ECCC, which distributes the same information across the same areas via different radio channels and the internet. There are arguments, which justify the program's continued involvement in providing weather information, such as a need in some areas where ECCC information cannot be accessed due to technological limitations (e.g., in the Arctic). Nevertheless, given the significant advancement of technological capabilities and operational conditions since 1980s, the evidence suggest that there are opportunities for MCTS to assess this service, in cooperation with ECCC, and to investigate whether any duplication of federal resources exists. [16]

[15] Training on new consolidated centres' geographical areas and systems requires MCTS officers to shadow other experienced officers; thus, doubling the time for shift assignments. An unintended result has been that some MCTS officers have become accustomed to inflated annual earnings.

[16] The partnership between the two federal organizations is governed by a MoU signed in 1973, and amended in 1984. At that time, the weather broadcasting technology was based on Morse code, and was only available to the CCG; consequently, CCG agreed to take responsibility for the weather broadcast at sea, on behalf of ECCC.

4.3.4 Enhancing national leadership

One of the key factors that were found to affect the program's efficiency was the absence of MCTS national program specialists to support the program's operations between 2012 and August 2016. Internal interviewees noted that this situation resulted in the program's inability to update, on an on-going basis, its standards and procedures, and in a lack of clarity regarding the roles and responsibilities between the NHQ and the regions.

Key Finding: Roles and responsibilities between National Headquarters and MCTS centres in the Regions are not clear.

> "With the lack of national direction and communication, the program functions as if there were three distinct regional programs doing their own thing."
>
> (Interviewee)

Over two thirds of the MCTS program staff members interviewed were of the opinion that the roles and responsibilities between the regions and NHQ were not clearly defined and understood. They believed that the issue occurred after 2012, and was exacerbated by the changes resulted from the consolidation of the centres. There is, however, a perception that local and regional specifics are not always taken into consideration because there is no dialog between the national team and the centres. Consequently, in some cases the purpose of a direction is not fully understood because the rationale was not communicated across the program. It was also mentioned that the practice of announcing procedural changes in e-mails and memos requires a lot of time for centres to keep track of all updates; this might be organized better (i.e., via a website with all updates).

Key Finding: There is a strong perception among MCTS staff both at NHQ and in the regions that the standards and procedures are not up-to-date.

To ensure that the program provides high quality services and information that is standardized across all regions, MCTS relies on a suite of documents, which need to comply, when applicable, with International standards. Key guiding documents, such as the Standards Manual 5608, need to be updated regularly, when any changes to MCTS operations (i.e., implementation of a new technology or application) are implemented. There are also regional guidelines and documents, which define day-to-day operational procedures, some of which are regionally-specific. As of July 2016, more than a half of the program staff interviewed believed that MCTS guiding documents had not been reviewed and updated to reflect the current post-C&M operational environment. Evidence from the survey and interviews suggest that this issue has sometimes resulted in inconsistent delivery of services.[17] Some of the reasons provided to explain the lack of standardized guidelines and procedures include the current workload due to the staffing gap, the significant changes resulting from the C&M project and the lack, over the last years, of national program specialists dedicated to this task.

[17] One example of service being affected by outdated documents was the delivery of NOTSHIPs: different MCTS centres use different standards, even though NOTSHIPs have to be consistent with the international standards. Currently the program is working on addressing the issue by conducting a review of the NOTSHIP services.

The MCTS program is currently implementing a national quality management system (QMS), where various facets of the program delivery will be audited for quality insurance purposes. A key component of this project is the development of national guidelines and procedures that will allow the program to determine quality benchmarks, against which the performance of MCTS employees will be measured. The QMS is expected to improve significantly the national coherence of the program and the quality of MCTS services to its clients.

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The relevance of MCTS was confirmed by the strong legislative mandate that supports its role within the Canadian marine safety system. There is an increasing need for a strong marine safety system, given the increased traffic and size of vessels entering Canadian waters. MCTS clients expressed a strong level of agreement that the MCTS is important to ensure safe transit in Canadian waterways.

Although MCTS experienced a period of significant changes during the Consolidation and Modernization project, the evidence suggest that the program is now well positioned to play a key role in the Canadian marine safety system by providing quality services, aligned with the needs of clients and partners. The program has maintained its provision of services with almost no impact to mariners during the implementation of the C&M project, and MCTS is using its resources in an efficient and economical manner.

The evaluation made three recommendations related to the need to address the staffing gap, the potential duplication of weather broadcasting services and the implementation of a Quality Management System.

5.2 Recommendations

Based on the findings of the evaluation, three recommendations are being made.

Recommendation 1: It is recommended that the Deputy Commissioner, Operations develop and implement a sustainable staffing strategy to address the short, medium, and long-term staffing needs of the program.

> **Rationale:** As of November 2016, there were 22.5 vacant positions (FTEs) and 20 employees (FTEs) who were on leave without pay, for a total gap of 42.5 FTEs. Increasing the MCTS program's staffing level from 5.5 to 6.0 would result in the need to recruit 24 additional FTEs. The data provided by the program also show that over the next five years, more than 100 employees will be eligible for retirement; this will increase the program's staffing needs in the long-term.

Recommendation 2: It is recommended that the Deputy Commissioner, Operations consult with Environment and Climate Change Canada (ECCC) to investigate whether there is any duplication in weather broadcasting services delivered by MCTS and ECCC; if duplication exists, it is recommended that this be addressed jointly.

Rationale: Both organizations are broadcasting weather information to mariners via different communication channels. In 2010, MCTS weather broadcasting services represented approximately 10% of the total workload of MCTS centres, on average**.**

Recommendation 3: It is recommended that the Deputy Commissioner, Operations pursue the implementation of the national quality management system to ensure that MCTS operational guidelines and procedures are standardized and applied nationally.

Rationale: More than a half of the program staff interviewed believed that MCTS guiding documents had not been reviewed and updated to reflect the current post-C&M operational environment. Evidence from the survey and interviews suggest that this issue has sometimes resulted in inconsistent delivery of services. The MCTS program is currently implementing a national quality management system (QMS), where various facets of the program delivery will be audited for quality assurance purposes. A key component of this project is the development of national guidelines and procedures that will allow the program to develop quality benchmarks against which the performance of MCTS employees will be measured. The QMS is expected to significantly improve the national coherence of the program and improve the quality of MCTS services to its clients.

ANNEX A – EVALUATION MATRIX

Evaluation Question	Indicators	Lines of Evidence				Data Source
		CCG Interviews	External Interviews	Survey	Document Review	
1.0 RELEVANCE: To what extent is there a need for the MCTS program?						
1.1 Is there a continued need for the MCTS program?	Evidence to support continued need				√	
	Views on continued need	√	√	√		
1.2 To what extent is the MCTS program aligned to departmental and federal government priorities?*	Degree of alignment with current federal government objectives and priorities				√	Documents
	Degree of alignment with current departmental strategic outcomes				√	Documents
1.3 Is the MCTS program consistent with federal roles and responsibilities?	Alignment with federal government jurisdiction				√	Documents
2.0 EFFECTIVENESS: To what extent has the MCTS program progressed towards achieving its outcomes?						
2.1 To what extent is the MCTS information timely and of good quality[18]?	Percent of information products disseminated within the published Levels of Service				√	PMS
	Percent of calls responded to as per the CCG Levels of Service				√	PMS
	Evidence/views on the responsiveness of MCTS to the needs of users	√	√	√	√	Documents Data (PMS)
2.2 To what extent do users have the marine communication and traffic services support to ensure safe transit of Canadian waters?	Percentage of incidents occurring while vessels are active vessel traffic system (VTS) participants				√	PMF

[18] The evaluation used a quality measurement framework in use at Statistics Canada. Timeliness, accuracy and accessibility measured the quality of service outputs; relevance measured the program's responsiveness to users' needs.

Evaluation Question	Indicators	Line of Evidence				Data Source
		CCG Interviews	External Interviews	Survey	Document Review	
2.2 (Continued) To what extent do users have the marine communication and traffic services support to ensure safe transit of Canadian waters?	Percentage of distress incidents where MCTS program delivery was determined to be a contributing factor				√	PMS
	Views on the extent to which users have the marine communication and traffic services support to ensure safe transit of Canadian waters	√	√	√		
3.0 Resource Utilization						
3.1 Has the consolidation and modernization of MCTS resulted in more efficient program delivery?	Pre-post comparison of the financial levels ($) and the number of FTEs versus the workload[19]				√	Financial Data; HR Data; PMS
	Extent, to which MCTS resources / capacity are adequate for achievement of expected results (analysis of planned versus actual resources)	√			√	Financial Data
	Evidence/views of factors that have an impact on the efficiency of the MCTS program (e.g., training)	√	√		√	Documents
4.0 Other						
4.1 Is the program's current design and delivery appropriate for achievement of its expected outcomes?	Evidence / views of clearly defined and understood governance structure including program policies and procedures	√	√		√	Documents
	Views of changes that could be made to improve the program's performance and likelihood of success	√	√	√		
	Comparison of MCTS program activities delivered by other similar programs internationally				√	

[19] Workload was measured by number of calls responded to; purpose of call; number of reports/ alerts/ information products issued to stakeholders; number of navigational warnings provided as per Level of Service (NOTSHIPS, NAVTEX and navigation areas (NAVAREAs)); number of incidents identified; number of traffic clearances issued to vessels in VTS zones; number of recommendations and directions issued; and number of vessel movements.

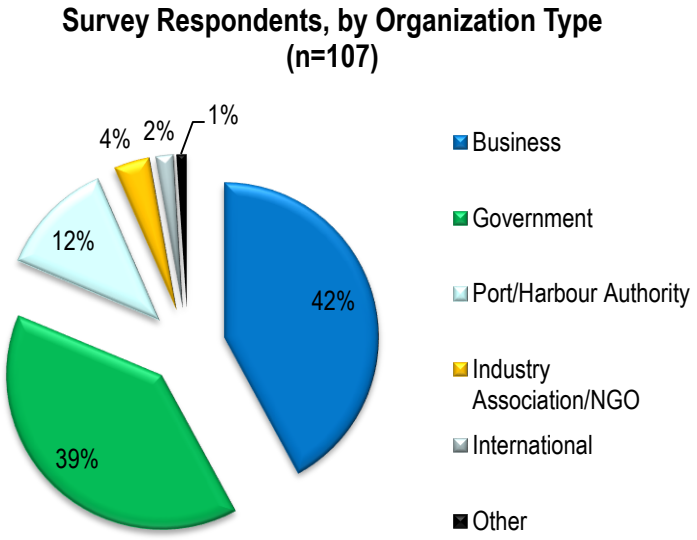
Evaluation Question	Indicators	Line of Evidence				Data Source
		CCG Interviews	External Interviews	Survey	Document Review	
4.2 Has MCTS resulted in any unintended (positive or negative) outcomes?	Evidence/views of significant successes/ challenges related to the consolidation and modernization of MCTS?	√	√	√	√	Documents
4.3 Is appropriate performance information being collected, stored, and used?**	Evidence of data collection and a performance measurement data system				√	Documents
	Reported ways in which performance information is used	√			√	Documents

* The evaluation put less focus on assessing the alignment with the federal and departmental priorities, because of the strong legislative mandate and the role of the federal government and the CCG covered in 4.1.1 and 4.1.5.
** This evaluation did not assess performance information and the program's performance measurement system, in anticipation of changes to performance measurement, which were underway due to the implementation of the *Policy on Results*.

ANNEX B – SURVEY RESPONDENTS' PROFILE

An on-line survey, developed by the Evaluation Directorate, was conducted between August and October, 2016. A profile of survey respondents follows.

- 107 users responded to the online survey between August and October, 2016; and 91 users answered 100% of the survey questions.
- Respondents represented organizations, which were aggregated into six categories:
  - Business (e.g., for-profit businesses, commercial shipping organizations)
  - Government (all levels of governments, government agencies, RCMP/police services)
  - Port/Harbour Authorities
  - Industry Association/ NGO
  - International
  - Other
- The greatest proportion of respondents represented Business (42%) and Government (39%).
- Organizations represented operated in all three CCG regions: Western (British Columbia, Alberta, Saskatchewan, Manitoba, Yukon), Central & Eastern (Ontario, Quebec, Northwest Territories, Nunavut), and Atlantic (Newfoundland and Labrador, New Brunswick, Nova Scotia, Prince Edward Island).
  - 37% operated exclusively in the Central and Arctic region
  - 29% operated exclusively in the Western region
  - 7% operated exclusively in the Atlantic region
  - 13% operated in all three regions
  - 13% operated in combinations of regions and provinces/territories.
  - 1% had exclusively international operations



ANNEX C – MANAGEMENT ACTION PLAN

RECOMMENDATION 1			
Recommendation 1: It is recommended that the Deputy Commissioner, Operations develop and implement a sustainable staffing strategy to address the short, medium, and long-term staffing needs of the program. **Rationale:** As of November 2016, there were 22.5 vacant positions (FTEs) and 20 employees (FTEs) who were on leave without pay, for a total gap of 42.5 FTEs. Increasing the MCTS program's staffing level from 5.5 to 6.0 would result in the need to recruit 24 additional FTEs. The data provided by the program also show that over the next five years, more than 100 employees will be eligible for retirement; this will increase the program's staffing needs in the long-term.			
STRATEGY			
With the implementation of the Ocean Protection Plan, the MCTS program will increase its staffing factor from 5.5 to 6.0 per position. This will mean an addition of 24 positions across the MCTS program in the three Coast Guard regions. In order to fill the current vacancies as well as the additional 24 positions which will be created from the increase in the staffing factor, the MCTS program will develop a short and long term staffing strategy which will take into account the needs and requirements of the regions as well as the ability of the Canadian Coast Guard College to train MCTS officers. Consultation with both these entities will be required.			
MANAGEMENT ACTIONS	**DUE DATE (BY END OF MONTH)**	**STATUS UPDATE: COMPLETED / ON TARGET / REASON FOR CHANGE IN DUE DATE**	**OUTPUT**
Initiate the development of a short, medium and long term staffing strategy.	April 2017		
Complete consultations with MCTS regions and Canadian Coast Guard College to determine the best means to train and certify the necessary staff.	June 2017		
Consult Union Local 2182.	June 2017		

Complete the draft staffing strategy	October 2017		
Send draft report to the regions and union for comment and feedback.	November 2017		
Finalize the staffing strategy.	December 2017		
Seek DC Operations approval of the staffing strategy.	January 2018		
Implement the approved strategy.	February 2018.		

RECOMMENDATION 2

Recommendation 2: It is recommended that the Deputy Commissioner, Operations consult with Environment and Climate Change Canada (ECCC) to investigate whether there is any duplication in weather broadcasting services delivered by MCTS and ECCC; if duplication exists, it is recommended that this be addressed jointly.

Rationale: Both organizations are broadcasting weather information to mariners via different communication channels. In 2010, MCTS weather broadcasting services represented approximately 10% of the total workload of MCTS centres, on average**.**

STRATEGY

Since ECCC and CCG (MCTS) broadcast meteorological/ice warnings/forecasts over Very High Frequency (VHF) systems within 40 nm of the Canadian coast line, a comprehensive review of both the broadcast content and areas of broadcast should be initiated to determine the extent of the service duplication and identify any potential gaps in coverage by either ECCC or CCG. Recommendations from this analysis will be presented for approval. Inter-departmental relations is the responsibility of National Strategies, thus, the MCTS program will collaborate with this directorate to undertake this recommendation.

MANAGEMENT ACTIONS	DUE DATE (BY END OF MONTH)	STATUS UPDATE: COMPLETED / ON TARGET / REASON FOR CHANGE IN DUE DATE	OUTPUT
Collaborate with National Strategies (NS) to initiate inter-departmental discussions with ECCC regarding the current duplication of VHF broadcast services by the two departments.	April 2017		
With NS as the lead, contribute to the development of an Action Plan to ensure an effective comprehensive review of the current VHF broadcast services by each department.	June 2017		
Establish/lead a formal ECCC/CCG working group to determine potential duplications and/or gaps in VHF broadcast services and coverage areas.	September 2017		
Draft report citing the analysis and	January 2018		

recommendations for review by the Working group.			
With NS, present to CCG Operations Executive Board (OEB) the final analysis and recommendations.	February 2018		

RECOMMENDATION 3

Recommendation 3: It is recommended that the Deputy Commissioner, Operations pursue the implementation of the national quality management system to ensure that MCTS operational guidelines and procedures are standardized and applied nationally.

Rationale: More than a half of the program staff interviewed believed that MCTS guiding documents had not been reviewed and updated to reflect the current post-C&M operational environment. Evidence from the survey and interviews suggest that this issue has sometimes resulted in inconsistent delivery of services. The MCTS program is currently implementing a national quality management system (QMS), where various facets of the program delivery will be audited for quality assurance purposes. A key component of this project is the development of national guidelines and procedures that will allow the program to develop quality benchmarks against which the performance of MCTS employees will be measured. The QMS is expected to significantly improve the national coherence of the program and improve the quality of MCTS services to its clients.

STRATEGY

The Marine Communications and Traffic Services program has sought approval from the Operations Executive Board to implement a National Quality Management System. The system will ensure national consistency, a review and update on a regular basis of the national guidelines and procedures. It will also provide a mechanism for continuous improvement in the provision of MCTS services. The QMS will provide a set of tools to ensure a high quality and efficient service is delivered and meets the program performance indicators at all levels.

MANAGEMENT ACTIONS	DUE DATE (BY END OF MONTH)	STATUS UPDATE: COMPLETED / ON TARGET / REASON FOR CHANGE IN DUE DATE	OUTPUT
Develop an implementation plan for the Quality Management System.	April 2017		
Complete the preparation of all necessary documentation which will accompany the QMS system including policies, forms and training materials.	August 2017		
Complete union consultation on the implementation of the National Quality Management System.	August 2017		

Complete the necessary regional training for QMS.	October 2017		
Draft and seek approval of the National QMS audit schedule and national standards to be audited for 2017-18.	November 2017		
Initiate the national audit process.	December 2017		
Draft and approval of the first National QMS Report.	February 2018		