



ROYAL CANADIAN SEA CADETS

ALL PHASES

INSTRUCTIONAL GUIDE



SECTION 1

MARITIME COMMUNITY FAMILIARIZATION

EO MX26.01D – PARTICIPATE IN MARITIME COMMUNITY FAMILIARIZATION LEARNING STATIONS

Total Time: 90 min

PREPARATION

PRE-LESSON INSTRUCTIONS

This IG supports EO MX26.01D (Participate in Maritime Community Familiarization Learning Stations).

Select learning stations as per chart.

| Topic | Learning Station | Self-Directed | Instructor Led | 15 min | 30 min | 60 min | Phase |
|---------------------------|---|---------------|----------------|--------|--------|--------|-------|
| Educational Opportunities | Annex A Canadian Coast Guard (CCG) Educational Opportunities | | X | X | | | 1-4 |
| | Annex B Civilian Maritime Educational Opportunities | X | | X | | | 1-4 |
| Employment Opportunities | Annex C CCG Career Opportunities | | X | X | | | 1-4 |
| | Annex D Fisheries and Oceans Canada (DFO) Career Opportunities | | X | X | | | 1-4 |
| | Annex E Civilian Maritime Career Opportunities | | X | X | | | 1-4 |
| Types of Vessels | Annex F CCG Vessels | | X | X | | | 1-4 |
| | Annex G Commercial Shipping Vessels | | X | X | | | 1-2 |
| | Annex H Civilian Vessels | | X | X | | | 1-2 |
| Maritime Industry | Annex I Shipbuilding | | X | | X | | 1-4 |
| | Annex J Commercial Shipping Industry | | X | X | | | 1-4 |

| Topic | Learning Station | Self-Directed | Instructor Led | 15 min | 30 min | 60 min | Phase |
|------------------------|------------------|---------------------------------------|----------------|--------|--------|--------|-------|
| | Annex K | The St. Lawrence Seaway | | X | | X | 1-4 |
| Maritime Organizations | Annex L | Fisheries and Oceans Canada | | X | | X | 1-4 |
| | Annex M | Canadian Coast Guard (CCG) | | X | | X | 1-4 |
| | Annex N | Transport Canada | | X | | X | 1-4 |
| | Annex O | Transportation Safety Board of Canada | | X | | X | 4 |
| Marine Stewardship | Annex P | Marine Stewardship | | X | | X | 1-4 |

Plan and prepare activities as per Annexes A–P.

In addition to the suggested activities at Annexes A–P, activity leaders may choose to create their own interactive, challenging and fun activities.

Gather the required resources for the selected activities, as well as a stopwatch. Some learning stations require assistant instructors.

PRE-LESSON ASSIGNMENT

Nil.

INTRODUCTION

APPROACH

Learning stations were chosen for this lesson as they are a fun and interactive way to build on the cadets' knowledge of the maritime community.

REVIEW

Nil.

OBJECTIVES

By the end of this session the cadets shall have gained a better understanding of the maritime community through topics covered in the selected learning stations.

IMPORTANCE

It is important for cadets to participate in maritime community familiarization learning stations to develop an understanding of the maritime community and its role and contributions within Canada and the international community.

ACTIVITY

1. Divide the cadets into groups.
2. Arrange a system of rotation for groups to move through the stations. Explain the procedure for moving from one station to the next, the time allotted for each station and the signal to switch.
3. Assign each group to their first learning station.
4. Supervise and provide guidance where necessary.

CONCLUSION

METHOD OF EVALUATION

Nil.

CLOSING STATEMENT

The learning stations develop an understanding of the maritime community, its history, role, and contributions within Canada and the international community. By participating in these learning stations, you have become more aware of the maritime community.

INSTRUCTOR NOTES / REMARKS

Activities shall be chosen based on human and material resources available to the corps.

Complementary training time may be allotted to this EO to allow for additional learning stations throughout the training year.

There are numerous potential leadership opportunities for cadets when conducting these learning stations:

- Phase Five cadets may plan, prepare and conduct the learning stations activity as a leadership project IAW PO 503 (Lead Cadet Activities); and
- Phase Three, Phase Four, and Phase Five cadets may complete leadership assignments IAW POs 303 (Perform the Role of a Team Leader), 403 (Act as a Team Leader), and 503 (Lead Cadet Activities), such as leading a maritime community familiarization learning station.

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CANADIAN COAST GUARD (CCG) EDUCATIONAL OPPORTUNITIES

OBJECTIVE: The aim of this learning station is to familiarize the cadets with CCG educational opportunities.

TIME: 15 min

PHASES: 1–4

PRE-ACTIVITY INSTRUCTIONS:

- Assign an instructor to this activity.
- Download the CCG College promotional video from <http://www.ccg-gcc.gc.ca/College-and-Careers/CCG-College-Videos/CCGC-Promotional>
- Gather the required resources: Multimedia equipment (laptop / projector / speakers).

ACTIVITY INSTRUCTIONS:

1. Have the cadets watch the video.
2. Following the video, have a discussion about what the cadets learned from it. Questions can include:
 - a. Name one thing you learned about the CCG College.
 - b. Did you see anything that the CCG does that you do as a cadet?
 - c. What subjects do the students learn at the CCG College?

CIVILIAN MARITIME EDUCATIONAL OPPORTUNITIES

OBJECTIVE: The aim of this learning station is to familiarize the cadets with civilian maritime educational opportunities.

TIME: 15 min

PHASES: 1–4

PRE-ACTIVITY INSTRUCTIONS:

- Contact as many educational institutions as possible to obtain promotional material on the maritime educational opportunities that they provide. If possible, obtain a promotional video for the program(s). Educational institutions that offer maritime education include:
 - Fisheries and Marine Institute of Memorial University of Newfoundland (St. John's, N.L.),
 - Institut Maritime du Quebec (Rimouski, Que.),
 - Georgian College – Owen Sound Campus (Owen Sound, Ont.), and
 - British Columbia Institute of Technology – Marine Campus (Vancouver, B.C.).
- Gather the required resources: Multimedia equipment (laptop / projector / speakers).
- Set up the station with an assortment of information regarding the maritime educational opportunities available to the cadets.

ACTIVITY INSTRUCTIONS:

1. Have the cadets look at the promotional material / video.
2. Have the cadets complete the handout located at Appendix 1.

Civilian Maritime Educational Opportunities

1. List the educational institution / program that most interests you.

2. What do you find appealing about the institution / program?

3. Do you think your training as a Sea Cadet would be beneficial should you choose a maritime career? Why?

CCG CAREER OPPORTUNITIES

OBJECTIVE: The aim of this learning station is to familiarize the cadets with CCG career opportunities.

TIME: 15 min

PHASES: 1–4

PRE-ACTIVITY INSTRUCTIONS:

- Assign an instructor to this activity.
- Download the CCG promotional video from (<http://www.ccg-gcc.gc.ca/College-and-Careers/CCG-Promotional-Videos/Promotional-Video>).
- Photocopy and cut out the career description and title cards located at Appendix 1 and lay them out on the table.
- Gather the required resources: Multimedia equipment (laptop / projector / speakers).

ACTIVITY INSTRUCTIONS:

1. Have the cadets watch the video.
2. Following the video, have the cadets complete the career matching game by matching the career title to its description.
3. Provide interested cadets with the link to the CCG careers video.

| | |
|--|--|
| <p>Captain</p> | <p>I am the Commanding Officer of the ship. I manage the ship and its crew. I am responsible for ensuring CCG programs are delivered, and the safety of the crew, ship, and the environment.</p> |
| <p>Navigation Officer</p> | <p>I am responsible for the safety of the ship, the crew and any other person on board. I coordinate vessel's operations and supervise the activities of the crew working on the bridge.</p> |
| <p>Marine Engineering Officer</p> | <p>I oversee the operation of the ship's engine(s), auxiliary equipment.</p> |
| <p>Engine Room Crew</p> | <p>I assist the Engineering Officer with the operation, maintenance and repair of the vessel's engine(s) and auxiliary equipment. I also monitor equipment, check gauges and record readings, and ensure that the machinery is operating within normal parameters.</p> |

| | |
|---------------------------|---|
| Electrical Officer | I am responsible for the maintenance of the electrical components of the engine, generator, auxiliary machinery, deck machinery, and systems of the vessel. |
| Logistics Officer | I provide support to all shipboard personnel. I coordinate all housekeeping and catering services, and administer the ship's financial resources. |
| Cook | I develop a variety of healthy menus, and prepare and cook meals for the crew on board. |
| Steward | I am responsible for housekeeping duties on the vessel, as well as loading supplies. |

| | |
|-----------------------------------|---|
| <p>Clerk / Storekeeper</p> | <p>I am responsible for the management of the food inventory, and provide clerical support for personnel administration, pay and benefits documentation, and travel arrangements.</p> |
| <p>Deckhand</p> | <p>I am responsible for the maintenance and operation of small boats, ropes and any other deck equipment on the ship. I also assist with Search and Rescue operations, maintenance of aids to navigation, environmental response and fisheries enforcement.</p> |
| <p>Twinehand</p> | <p>I assist with fishing research by maintaining fishing gear. I also stand watch and maintain small boats. I may also assist with Search and Rescue operations, maintenance of aids to navigation, environmental response and fisheries enforcement.</p> |

FISHERIES AND OCEANS CANADA (DFO) CAREER OPPORTUNITIES

OBJECTIVE: The aim of this learning station is to familiarize the cadets with DFO career opportunities.

TIME: 15 min

PHASES: 1–4

PRE-ACTIVITY INSTRUCTIONS:

- Assign an instructor to this activity.
- Cut out the career description and title cards located at Appendix 1 and place on the table.
- Download the Fishery Officer career video from <http://www.dfo-mpo.gc.ca/career-carriere/enf-loi/officer-agent-eng.htm>
- Photocopy the DFO career information sheets located at Appendix 2 one per three cadets or download them from the DFO website.

ACTIVITY INSTRUCTIONS:

1. Have the cadets watch the Fishery Officer career video and read the DFO career description sheets.
2. Have the cadets complete the career matching game by matching the career title to its description.
3. Allow the cadets to take the information sheets should they want more information on a career in the DFO.

| | |
|----------------------------------|--|
| <p>Hydrographer</p> | <p>I am responsible for surveying and charting Canada's coastal and inland waters to provide information for the safe, orderly and efficient conduct of vessels.</p> |
| <p>Research Scientist</p> | <p>I conduct research to increase our knowledge and understanding of the oceans that surround Canada. I am responsible for identifying research questions, conducting and overseeing field research to collect data, studying trends and conducting other forms of scientific exploration.</p> |

| | |
|-----------------------------------|--|
| <p>Research Technician</p> | <p>I work in close contact with sealers and fish harvesters within the region to learn specific things about the species they are studying. I may also go on expeditions where I will collect scientific samples of different aquatic species within the region. Finally, I analyze collected data and provide important information to the Research Scientists.</p> |
| <p>Fishery Officer</p> | <p>I carry out a wide range of duties on land and at sea, such as:</p> <ul style="list-style-type: none">• enforcing the Fisheries Acts and other related acts and regulations;• protecting fishery resources and fish habitats; and• participating in public education and awareness of the fishery resources and habitat protection. |



Fisheries and Oceans
Canada

Pêches et Océans
Canada



Wanna be a hydrographer?

Are you technically-inclined? Does the challenge of working outside on the water appeal to you?

What do they do?

Canadian Hydrographic Service is responsible for surveying and charting Canada's coastal and inland waters to provide information for the safe, orderly and efficient conduct of vessels.

Hydrographers spend about half their working time in field surveys and the other half in offices working with the collected data. Surveys are frequently carried out in hazardous conditions at sea in extremely cold temperatures and hydrographers must spend extended periods of time at sea or in isolated areas. For example, hydrographers charting Canadian Arctic waters work in isolation for up to four months at a time.

How do I become a hydrographer?

Most hydrographers come from technological institutes for surveyors, or are university graduates in civil or survey engineering or in one of the physical sciences. Because the work is so specialized, requiring competence in both seamanship and the operations and theory of sophisticated instruments and equipment, the Department provides an accredited Class A Hydrographic Career Development training program in order to train the high quality personnel necessary to carry out its different tasks. The amount of time spent on each element of the program varies based on education, experience, aptitudes and demonstrated performance of the candidate.

Openings for jobs with Fisheries and Oceans Canada are advertised through the Public Service Commission (PSC) website at www.jobs.gc.ca.

For more information on the Canadian Hydrographic Service, please visit www.charts.gc.ca/pub.



SPOTLIGHT ON...

LIZ CUFF, HYDROGRAPHER.

"Our 10 weeks of surveying every year takes us into different communities that I probably wouldn't normally see. This year I went to northern Labrador. You get to meet with people in these communities and get an appreciation for their cultural diversity. That's one of the things I love the most about this province - its vast history and culture, not to mention the physical beauty of the land. The field season gives you a chance to get out of the office, and to top it all off I work with a great group of individuals. What more could I ask?"

Hearing Liz talk about her job you can tell she truly loves what she does.

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Wanna Be a Research Scientist?

Are you trained in science, particularly biology? Are you innovative and curious? Do you have practical experience in science research? Are you always seeking answers? Then, we may have the job for you!

What do they do?

The primary role of a research scientist with Fisheries and Oceans Canada (DFO) is to conduct research to increase our knowledge and understanding of the oceans that surround Canada. They are responsible for identifying research questions, conducting or overseeing field research to collect data, studying trends and conducting other forms of scientific exploration. For example, a research scientist studying seals may try to answer questions like how many are there, what do they eat, how deep do seals dive or how long they can stay underwater.

Along with their role to carry out the research, a scientist is also responsible for managing the science projects. Research scientists must write proposals to gain support for new research, take care of financial and staffing requirements to carry out the projects and act as leaders of the research team which can involve scientists with different specialties who may come from different regions in Canada or other countries.

Research scientists are the spokespersons for their research and provide advice. They often speak to their clients who are fish harvesters, students, fisheries managers,

communicators, members of the science community and others (Canadian or international) with an interest in the research carried out by DFO.

How do I become a Research Scientist studying Marine Mammals?

To become a research biologist you must first obtain a Bachelor of Science. You must also complete a doctorate degree (PhD), usually after having done a Masters Degree of Science. Although experience working with marine mammals will help, it is not necessary as long as you study in an area that provides you with the background to address questions that are important for marine mammals. This could include a variety of areas in biology, zoology, or even mathematics or geography.

During your studies at university, it would be to your advantage to seek out internships or summer jobs where you can participate in research. Working with a government research facility or a university will provide you with experience and allow you to see if research is an area you wish to pursue.

Openings for jobs and internships with Fisheries and Oceans Canada are advertised through the Public Service Commission (PSC) website at www.jobs.gc.ca

SPOTLIGHT ON...




GARRY STENSON IS A RESEARCH SCIENTIST, AND THE HEAD OF THE MARINE MAMMALS SECTION IN THE SCIENCE BRANCH AT FISHERIES AND OCEANS CANADA, NEWFOUNDLAND AND LABRADOR REGION.

"Working in a position such as mine is very rewarding and I never get bored. My days are never typical. I've always been interested in anything to do with nature and I love to travel and spend time in the outdoors. When I am doing field research or attending conferences I get the chance to see amazing things, meet interesting people and learn new things."

The majority of my research is focused on harp and hooded seals in the Northwest Atlantic. I love knowing that my job really makes an impact. My research team and I realize we have to be very careful because we are the authority, in terms of knowledge, on seals, a very high profile and influential mammal today in Newfoundland and Labrador and internationally."

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Wanna Be a Research Technician?

Are you interested in studying science at university? Do you like the idea of working in a laboratory? Would you like to travel around Newfoundland and Labrador collecting important data on different types of creatures and animals? Then, we may have the job for you!

What do they do?

A research technician with Fisheries and Oceans Canada (DFO) has three main roles: communications, field work, and analysis.

As a communicator, a research technician works in close contact with sealers and fish harvesters within the region to learn specific things about the species they are studying. For example, sealers and fish harvesters record data for the research technicians to use in their studies of a particular species. Information obtained from the seals that a sealer catches can provide valuable information on the biology of seals that is needed to estimate the number of seals in the population.

In the field, a research technician has the opportunity to travel on high speed aircrafts as well as small, medium and large boats. On these expeditions, research technicians collect scientific samples of different aquatic species within the region. Upon returning, technicians analyze the data in the DFO laboratories; providing important information that research scientists use to draw conclusions.

The key thing for a technician is that they are the people who are relied upon to put the plans of the research

scientists into action – they have the responsibility of collecting the data and doing the preliminary analysis that scientists rely upon. Sometimes they work with the scientist present but usually they are working on their own and so have to figure out the best way to obtain the data needed.

How do I become a research technician with Fisheries and Oceans Canada?

To become a research technician you must obtain a Bachelor of Science. It would be an advantage to study an area of biology related to aquatic species or wildlife. During your studies at university it would also be beneficial to seek out internships with the Science Branch at your local DFO offices. Experience working on a research project either at DFO or at the university is also helpful.

Summer and part-time positions are occasionally offered through the Public Service Commission student hiring program, Federal Student Work Experience Program (FSWEP). More information about FSWEP can be found online at http://jobs-emplois.gc.ca/srp/students/students-jobs_e.htm. Openings for employment and internships with Fisheries and Oceans Canada would otherwise be advertised through the PSC website www.jobs.gc.ca.

SPOTLIGHT ON...



WAYNE PENNEY IS A RESEARCH TECHNICIAN IN THE MARINE MAMMALS SECTION WITH THE SCIENCE BRANCH AT FISHERIES AND OCEANS CANADA

"Working as a research technician in the marine mammals section is a very exciting job. There is nothing better than going to work and boarding a high speed plane, laying on your belly and counting whales while you're flying over the Atlantic Ocean."

"As technicians, my co-workers and I have had many adventures in the field. One winter we travelled by snowmobile on the frozen ocean between communities in Labrador. It was minus 28 degrees and by the time we got to Hopedale, our destination, our feet were really frozen. While we were in the town, a local lady crafted seal skin boots for us. boy were they warm!"

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CIVILIAN MARITIME CAREER OPPORTUNITIES

OBJECTIVE: The aim of this learning station is to familiarize the cadets with civilian maritime career opportunities.

TIME: 15 min

PHASES: 1–4

PRE-ACTIVITY INSTRUCTIONS:

- Assign an instructor to this activity.
- Depending upon the interest of the cadets, download the video or visit one or more of the following websites on civilian maritime careers:
 - International Chamber of Shipping video, *Careers in International Shipping*, from <http://www.ics-shipping.org/free-resources/ics-films>
 - cruise ship jobs at <http://www.cruiseshipjob.com/position.htm>
 - ferry jobs at <http://www.bcferries.com/about/employment/> for BC Ferries or <https://www.marineatlantic.ca/en/about-us/careers/Current-Opportunities/> for Marine Atlantic in Newfoundland, and
 - shipbuilding jobs at <http://www.seaspan.com/careers> or <http://www.irvingshipbuilding.com/irving-shipbuilding-career.aspx>
- Photocopy the Civilian Maritime Careers activity sheets located at Appendix 1 for each cadet.
- Gather the required resources: Multimedia equipment (laptop / projector / speakers).

ACTIVITY INSTRUCTIONS:

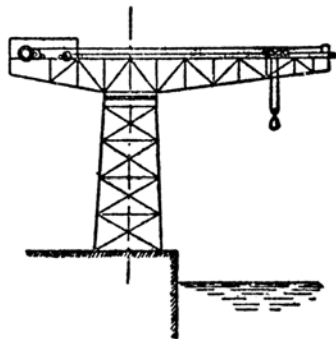
1. Show the *Careers in International Shipping* video or visit one or more of the websites.
2. While watching the video or visiting the websites have the cadets record any jobs they find interesting.
3. Have the cadets share their job interests to the group.

Commercial Shipping Industry





Cruise Ship Industry



Shipbuilding

CCG VESSELS

OBJECTIVE: The aim of this learning station is to familiarize the cadets with CCG vessels.

TIME: 15 min

PHASES: 1–4

PRE-ACTIVITY INSTRUCTIONS:

- Assign an instructor to this activity.
- Photocopy the CCG Vessels Bingo Card located at Appendix 1 for each cadet.
- Photocopy the CCG Vessels Bingo Calling Card located at Appendix 2.

ACTIVITY INSTRUCTIONS:

1. Distribute a CCG Vessels Bingo Card to each cadet.
2. Explain the rules of the game to the cadets, to include:
 - a. a description of a vessel will be read out for which a picture is located on the bingo card,
 - b. the cadet must identify which vessel it is and put a mark on the square, and
 - c. once the cadets get a line, they will call “bingo!”, and their card will be checked to ensure that it is a correct line, meaning that the descriptions and the vessels have been matched correctly.
3. Choose a random square and read the description from the calling card.
4. Allow the cadets to mark which picture they think matches the description that was read.
5. Repeat Steps 3 and 4 until a cadet calls “bingo!”.
6. Verify that the cadet has selected the correct vessels on their card, IAW the squares that were read out.
7. Read the description of the remaining vessels depicted on the card, and have the cadets write them on their card, to allow the cadets to become familiar with CCG vessels and their purposes.

CCG Vessels Bingo Card



CCG Vessels Bingo Calling Card

| | | |
|---|--|---|
| <p style="text-align: center;">Medium Icebreaker</p> <p>A large icebreaker, approximately 100 metres in length capable of sustained icebreaking and escort operations in the Arctic for 2 seasons per year and in the Great Lakes, St. Lawrence Seaway and Atlantic coast in winter.</p> | <p style="text-align: center;">Medium Endurance Multi-Tasked Vessel</p> <p>A large multi-tasked shallow draught vessel, approximately 65 metres long, with a top speed of 14 knots. Has a crane, a large cargo hold and deck area. Primarily used for aids to navigation, search and rescue, science and environmental response. Designed to have a helicopter deck but not generally equipped with one.</p> | <p style="text-align: center;">Mid-Shore Patrol Vessel</p> <p>A medium sized vessel, approximately 40 metres long with a top speed of 25 knots. No requirement for operations in ice-infested waters. Carries one or two rigid-hull inflatable boats with no helicopter capabilities. Primarily used for maritime security and fisheries enforcement.</p> |
| <p style="text-align: center;">Near-Shore Fishery Research Vessel</p> <p>A small research vessel with a 3–4 metre draught, a top speed of 12 knots and a moderate range; has lab capacity; used to conduct trawl surveys.</p> | <p style="text-align: center;">Air Cushion Vehicle</p> <p>A medium-sized, powerful multi-tasked vessel; plays an essential role in flood control activities in Eastern Canada by carrying out ice-breaking along the St. Lawrence River. As a hovercraft, is capable of working in very shallow areas. Primarily used for search and rescue, aids to navigation work, environmental response and icebreaking.</p> | <p style="text-align: center;">Mid-Shore Science Vessel</p> <p>Medium sized vessel, approximately 40 metres long and a top speed of 12–14 knots. No helicopter capability and limited capacity to carry survey launches. Primarily used for limited ecosystem fishery science, oceanographic missions and geological / hydrographic surveys.</p> |
| <p style="text-align: center;">High Endurance Multi-Tasked Vessel</p> <p>A large highly adaptable multi-tasked vessel, approximately 85 metres long, with an icebreaking capability to work for escort operations in the winter. Has a large cargo hold and deck capacity, has a helicopter hanger that will accommodate a CCG helicopter, and can launch and recover rigid-hull inflatable boats.</p> | <p style="text-align: center;">Special Nav aids Vessel</p> <p>A shallow-draft, flat-bottom vessel, approximately 50 metres long, can sustain repeated groundings due to shifting river channels, not suitable for open-sea work, no icebreaking capabilities. Can accommodate a helicopter with minimal hanger capabilities. Primarily used for navigational aids on the Mackenzie River.</p> | <p style="text-align: center;">Search & Rescue Lifeboat</p> <p>Small, approximately 15–17 metres long, shore-based self-righting lifeboat capable of search and rescue operations up to 100 nautical miles from shore with a top speed of approximately 25 knots with minimal ice capability to transit light ice-infested waters. No helicopter capability.</p> |

Answer Key:

Top Left Corner: Medium Icebreaker

Middle Top Row: Medium Endurance Multi-Tasked Vessel

Top Right Corner: Mid-Shore Patrol Vessel

Middle First Column: Near-Shore Fishery Research Vessel

Center Square: Air Cushion Vehicle

Middle Third Column: Mid-Shore Science Vessel

Bottom Left Corner: High Endurance Multi-Tasked Vessel

Middle Bottom Row: Special Navaid Vessel

Bottom Right Corner: Search & Rescue Lifeboat

COMMERCIAL SHIPPING VESSELS

OBJECTIVE: The aim of this learning station is to familiarize the cadets with commercial shipping vessels.

TIME: 15 min

PHASE: 1-2

PRE-ACTIVITY INSTRUCTIONS:

- Assign an instructor to this activity.
- Photocopy the Vessel Types located at Appendix 1 and the Commercial Shipping Vessels Activity Card located at Appendix 2 for every three cadets.
- Photocopy and cut out the Commercial Shipping Cargo cards located at Appendix 3 for every three cadets.
- Place each set of the Commercial Shipping Cargo cards into an envelope.

ACTIVITY INSTRUCTIONS:

1. Divide the cadets into groups of three.
2. Distribute the Vessel Types and Commercial Shipping Vessels Activity Card to each group.
3. Explain the activity to the cadets, to include:
 - a. each group will be given the Vessel Types to read,
 - b. each group will be given an activity card, which has pictures of different types of vessels,
 - c. each group will be given an envelope containing pictures of different types of cargo, and
 - d. the objective is to correctly match the cargo to the vessel after having read the vessel types handout.
4. Distribute an envelope containing commercial shipping cargo to each group.
5. Have the groups match the cargo to the vessels on their Commercial Shipping Vessels Activity Card.
6. Once completed, review the types of commercial shipping vessels and the cargo they carry.

COMMERICAL VESSEL TYPES

Dry Cargo Vessels



General cargo vessels are the most basic dry cargo carrying vessel; they are used to carry loose and irregular cargo which is not suitable for container, Ro-Ro, bulk or specialist heavy lift vessels. Stevedores will secure cargoes to these vessels using custom fittings often welded to the ships hold. General cargo vessels are often fitted with rigging for winches which are used to load and unload cargo to the vessel hold(s).

Container ships transport an estimated 52% of all global ocean trade and are specifically designed to transport ISO standardized shipping containers, these include 10, 20, 40 & 45ft standard containers, high-cube containers, open-top containers, flatrack and platform containers (these are used for oversized cargo), tank containers (for liquids / gasses) and refrigerated containers which require a power source to provide temperature control. Container ships are loaded / unloaded using gantry cranes which move the containers straight between the vessel and truck which removes the need for warehousing and improves efficiency. Container vessels come in many different sizes.



RO-RO or roll-on / roll-off vessels are ships designed to carry wheeled cargo. They come in different forms depending on the need, including vehicle ferries, cargo vessels (which are used for truck trailers, railroad cars etc) and car carriers which are the most prominent. Ro-Ro vessels are loaded / unloaded using single or multiple loading ramps.

Bulk carriers are used to transport loose dry cargoes such as ore, grains and cement which often have a high weight to cost ratio making ocean transportation by other methods / vessel types inefficient. Bulk carriers are large vessels which are usually divided into separate cargo holds, covered by hatches. Bulk carriers are loaded by spouts, conveyors or by cranes fitted with grabs, some carriers have cranes fitted to allow the loading and unloading of cargo without the need for port equipment. Bulk cargo is generally loaded from the vessel into hoppers which then use conveyor belts to transfer the cargo to open storage or silos.



Liquid Vessel Types (Tankers)



Crude oil carriers are designed to transport crude oil to refineries where it can be processed. Very Large Crude Carriers (VLCCs) and Ultra Large Crude Carriers (ULCCs) are the largest ships in the world. Due to the size of these supertankers many cannot dock at ports so cargoes are unloaded at offshore pumping stations / terminals. Supertankers (VLCCs & ULCCs) can carry approximately 2,000,000 barrels of oil or 318,000 metric tons.

Product carriers are like crude carriers but generally smaller, they are used to transport refined products from larger terminals to smaller ports located worldwide. These vessels carry products such as petroleum, diesel, asphalt, jet fuel, tar and lubricating oil, the smaller of these product carriers are also used for non-petroleum bulk products such as palm oil.



Liquefied gas carriers are highly specialized vessels which are used to transport Liquefied Natural Gas (LGN) or Liquefied Petroleum Gas (LPG). The cargo is stored within spherical tanks under high pressure and often at low temperatures. Loading and unloading of these vessels require specialist terminals and handling equipment. LGNs are usually larger than LPGs.

Chemical carriers are used for the transportation of a whole range of chemicals, which each have different properties, characteristics and inherit hazards. Chemical tankers generally have a number of separate cargo tanks. The material used for the cargo tanks or the coating determines what types of cargo each tank can hold, epoxy coated tanks can hold cargoes such as vegetable oil whilst hazardous cargo such as aggressive acids (eg, phosphoric and sulphuric acid) must be carried using stainless steel tanks.



Specialized Vessel Types



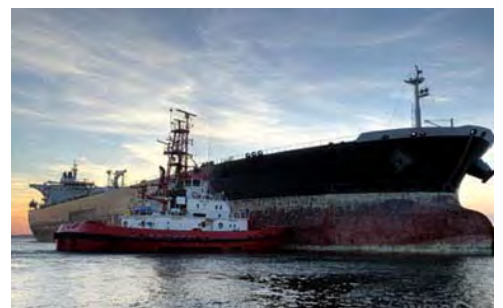
Heavy lift / project cargo vessels are specialist vessels built to transport extremely heavy or bulky cargoes including heavy industrial components and other vessels, such as yachts. There are two main types of heavy lift / project cargo vessels; semi-submersible (also known as flo-flo or float-on/float-off) which are used for the transportation of other vessels and augment unloading vessels which are fitted with specialist heavy lift equipment to make unloading at under-equipped ports possible. Semi-submersible vessels allow cargoes to be floated into position before the semi-submerged vessel de-ballasts to lift the cargo out of the water.

Livestock vessels are usually converted from other types of cargo vessels and fitted with the necessary equipment to safely transport large numbers of animals. They are designed to provide adequate ventilation, food and water. There is two types of livestock vessels; open livestock carriers with animal pens installed on open decks, providing natural ventilation and avoiding the reliance on mechanical ventilation systems, and closed livestock carriers which have animal pens within holds and internal decks of the vessel.









Passenger vessels range from small 10 person ferries to large cruise ships capable of carrying more than 6000 passengers. Passenger vessels such as cruise ships are fitted with hotel-like interiors and include facilities such as restaurants, shops, cinemas and swimming pools.

Tugs are highly manoeuvrable and powerful vessels which are used to assist larger and less manoeuvrable vessels. They can be used to assist ships in, out and around ports as well as during bad weather when their power and manoeuvrability can ensure the safe transit of large vessels. Tugs are also used for port to port transportation of barges and the movement of large structures such as offshore platforms and floating storage units.



Commercial Shipping Vessels Activity Card

| Vessel | Cargo |
|---|-------|
|  | |
|  | |
|  | |

| Vessel | Cargo |
|---|-------|
|  | |
|  | |
|  | |

Commercial Shipping Cargo



CIVILIAN VESSELS

OBJECTIVE: The aim of this learning station is to familiarize the cadets with civilian vessels.

TIME: 15 min

PHASES: 1–2

PRE-ACTIVITY INSTRUCTIONS:

- Assign an instructor to this activity.
- Gather one sound signalling device (eg, whistle / bell) for every three cadets.
- Photocopy and cut out the Civilian Vessels Puzzles located at Appendix 1 for every three cadets.
- Place each civilian vessel puzzle into an envelope.

ACTIVITY INSTRUCTIONS:

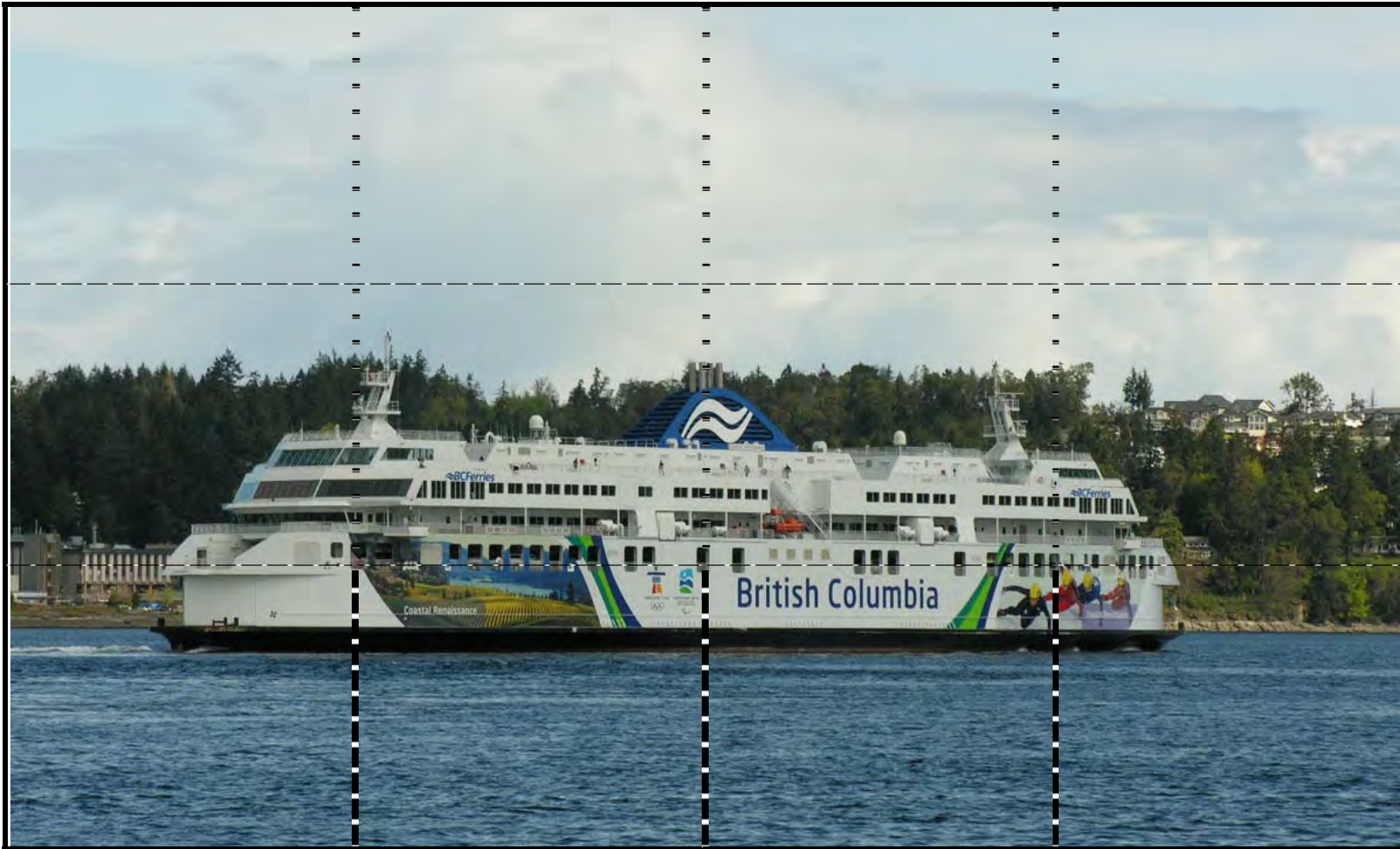
1. Divide the cadets into groups of three.
2. Explain the rules of the game to the cadets, to include:
 - a. each group will be given a civilian vessel puzzle,
 - b. when indicated, the group will assemble the puzzle and “buzz” in, using the sound signalling device, when it is completely assembled and they have determined the type of vessel,
 - c. once a ship has been determined, have the group identify the vessel purpose and how they think that type of vessel contributes to the civilian maritime community,
 - d. for each correctly identified type of vessel, the group will receive a point,
 - e. if a group does not correctly identify a type of vessel, the next group to “buzz” in will be given an opportunity to guess the puzzle that their group was assigned.
3. Distribute an envelope containing a civilian vessel puzzle to each group.
4. Have the groups assemble the puzzle and “buzz” in to guess the type of civilian vessel.
5. Have the group identify how they think the type of vessel contributes to the civilian maritime community. A list of potential responses is located at Appendix 2.

6. Award a point to the first group to correctly identify the civilian vessel.
7. Repeat Steps 3-5 until for as long as time allows, or until all the puzzles have been completed.
8. Appoint a winner of the game based on the highest number of points awarded.

Civilian Vessels Puzzles



MX26.01DH1-1







MX26.01DH1-4



MX26.01DH1-5



MX26.01DH1-6





MX26.01DH1-8



Civilian Vessels Puzzles – Potential Responses

Puzzle #1 – Cruise Ship

Expected answers: Supports tourism across the globe, contributes to the economy, creates jobs, may impact environment (pollution and tourism in secluded environments).

Puzzle #2 – Ferry

Expected answers: Supports tourism locally, transports people, vehicles / goods short and long distances, improves quality of life for locals in secluded areas, contributes to the economy, and creates jobs.

Puzzle #3 – Yacht

Expected answers: Supports tourism, creates jobs, method of transportation and supports local economies.

Puzzle #4 – Sailing Vessel

Expected answers: Supports tourism, creates jobs, method of transportation and supports local economies.

Puzzle #5 – Fishing Vessel

Expected answers: Creates jobs, contributes to the economy, creates trade, form of recreation, sport, provides food, could affect species populations.

Puzzle #6 – Cable Ferry

Expected answers: Used where the water may be too shallow for other options or where the river current is too strong to permit the safe crossing of a ferry not attached to the shore. Carries passengers and vehicles, supports tourism, improves quality of life for locals in secluded areas, contributes to the economy, and creates jobs.

Puzzle #7 – Tug Boat

Expected answers: Tugs move vessels that either should not move by themselves, such as ships in a crowded harbor or a narrow canal, or those that cannot move by themselves. Some are ocean-going, be used as icebreakers or salvage boats and many can assist in firefighting, especially in harbors.

Puzzle #8 – Barge

Expected answers: Creates jobs, method of transportation for very heavy or bulky items, contributes to economy, increases trade, economic as the cost of hauling goods by barge is very low. Types of barges range from luxury hotel barges that carry tourists to modular barges used in surveying, mapping, laying and burial of optic fibre cables.

Puzzle #9 – Tall Ship

Expected answers: Supports tourism, offer youth development opportunities, supports economy through tourism, increases knowledge of maritime history and traditions, and can undertake scientific research and provide an opportunity for individuals to gain an understanding of the maritime environment and industry in the ports / communities visited. Support local economies especially with events involving multiple ships.

SHIPBUILDING

OBJECTIVE: The aim of this learning station is to familiarize the cadets with shipbuilding.

TIME: 30 min

PHASES: 1–4

PRE-ACTIVITY INSTRUCTIONS:

1. Assign an instructor to this activity.
2. Download the Auxiliary Oiler Replenishment Ship video(s) from <http://www.davie.ca/media-centre/> and view the videos or Irving Shipbuilding, The Shipbuilding Story at https://www.youtube.com/watch?v=_b-43xALbfl
3. Gather the required resources: Multimedia equipment (laptop / projector / speakers).

ACTIVITY INSTRUCTIONS:

1. Have the cadets watch the Auxiliary Oiler Replenishment Ship video or the Shipbuilding Story video.
2. Following the video, have a discussion about what the cadets learned from it. Questions can include:
 - a. Name the types of vessels the shipyards are currently building.
 - b. Name two suppliers providing equipment for the new ships?
 - c. Who are they building the ships for?

COMMERCIAL SHIPPING INDUSTRY

OBJECTIVE: The aim of this learning station is to familiarize the cadets with the commercial shipping industry.

TIME: 15 min

PHASES: 1–4

PRE-ACTIVITY INSTRUCTIONS:

- Assign an instructor to this activity.
- Download the *International Shipping: Lifeblood of World Trade* video (<http://ics.purestonedev.co.uk/ics-films>).
- Gather the required resources: Multimedia equipment (laptop / projector / speakers).

ACTIVITY INSTRUCTIONS:

1. Have the cadets watch the *International Shipping: Lifeblood of World Trade* video.
2. Following the video, divide the cadets into pairs.
3. Have each pair identify three key aspects of the commercial shipping industry.
4. Have each pair present their list to the group.

THE ST. LAWRENCE SEAWAY

OBJECTIVE: The aim of this learning station is to familiarize the cadets with the St. Lawrence Seaway.

TIME: 30 min

PHASES: 1–4

PRE-ACTIVITY INSTRUCTIONS:

- Assign an instructor to this activity.
- Photocopy the St. Lawrence Seaway Map located at Appendix 2.
- Photocopy the description cards located at Appendix 3.
- Mark off the “seaway” (eg, rope or tape) and using the map located at Appendix 2 place the description cards at the approximate locations that they would be.
- Gather the required resources: Spoons, pin pong ball or something similar to be carried on the spoon. Item to be used as “cargo” and a stopwatch.

ACTIVITY INSTRUCTIONS:

1. Introduce the St. Lawrence Seaway by presenting the information located at Appendix 1.
2. Divide the cadets into groups then describe the activity to the cadets, to include:
 - a. this is a simulation of a cargo ship passing through the St. Lawrence Seaway from Montreal, QC to Cornwall, ON;
 - b. cadets will act out the parts of the cargo ship, locks, and bridges, to include:
 - (1) cadets acting as the cargo ship will carry the cargo on the spoon as they race through the seaway;
 - (2) cadets will act as the locks simulating the gates using their arms to allow the ship to enter and exit the lock. The cadets acting as locks will count to ten when the ship reaches the first set of cadets and then another ten when the ship exits to mimic the wait time in the lock system.
 - (3) cadets acting as the bridges will simulate the bridge depending on the type of bridge; and
 - c. at each juncture a description will be read to explain what happens and the stopwatch will

pause as the description is being read.

3. Assign three cadets to be the ship. Pass them the “cargo” and station them along the “Seaway” at one of the locations so the cargo can pass to another ship. If the cargo falls then the ship must go back to the previous point and go through obstacles again. This is repeated until the ship can successfully pass the cargo without dropping it.
4. Assign two cadets for each of the locks and bridges.
5. Read the description card for the cargo ship and instruct the cadets to begin their journey, then start the stopwatch.
6. When the ship reaches the first lock, read the description and show the cadets the illustration of how a lock operates; then have the cadets simulate the ship passing through the lock. Repeat pattern through all locks and bridges.
7. When the ship reaches a bridge, cadets are to hold their arms out at chest level and simulate the ship passing under the bridge.
8. Continue until the ship reaches its destination of Cornwall, ON. Stop the time and the group with the fastest trip wins.
9. Conclude by conducting a group discussion, asking the following questions:
 - a. Why is this seaway so critical to North America?
 - b. How did the invention of the lock system change the shipping industry?
 - c. What do you find most fascinating about this seaway?

The St. Lawrence Seaway

The St. Lawrence Seaway is a vital shipping route that extends from Montreal, QC to Lake Erie. It is comprised of a series of locks, canals, and channels that links the Atlantic Ocean to Lake Erie, at the interior of North America, and includes Canadian and American ports.

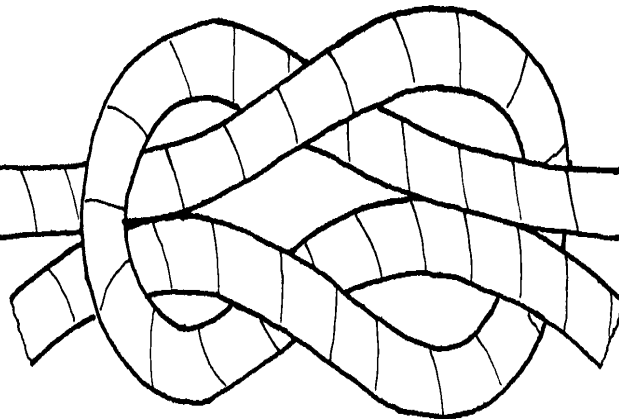
The seaway was opened in April 1959, which marked the realization of a 400-year old dream. In the early 16th century, Jacques Cartier, the French Explorer, was halted by the rushing waters of the Lachine Rapids, just west of what is now Montreal, QC. This barrier crushed his dream of finding the Northwest Passage and a route to the East.

Stretching more than 3,700 kilometres, the St. Lawrence Seaway is one of the world's greatest and most strategic commercial waterways.

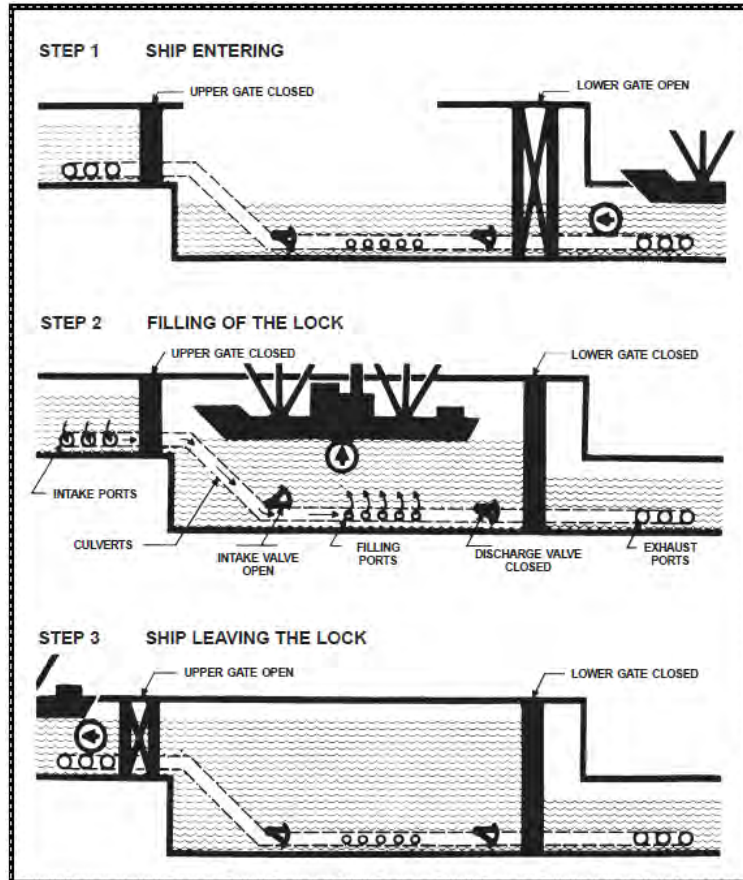


St. Lambert Lock

Ships must pass under the Victoria Bridge, which spans the St. Lawrence River, to enter this lock. The Victoria Bridge has a lift span that allows traffic to proceed uninterrupted during locking operations. This lock lifts ships 4.5 M from the Montreal harbour to the Laprairie Basin.



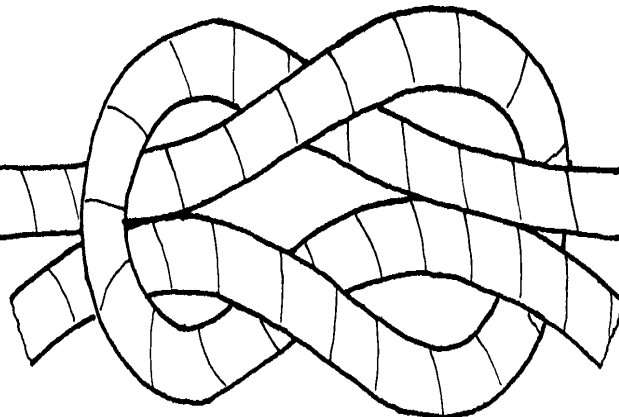
TYPICAL METHOD OF LOCKING A SHIP ON THE ST. LAWRENCE SEAWAY



Ships remain under their own power at all times and are secured in the lock chamber by a crew of line handlers. Once a vessel is safely moored, huge steel gates close behind it and valves are put into operation to fill or empty the lock by gravity flow. About 90 million litres of water are required and the time needed to fill or empty a lock is approximately 15 minutes. As the new water level is reached, the forward gates are opened and, at a sign from the lock crew, the vessel proceeds out of the lock. A complete lock transit takes approximately 30 to 45 minutes to complete (including the vessel's approach, mooring, lock filling / emptying, cast off, and exit from the lock).

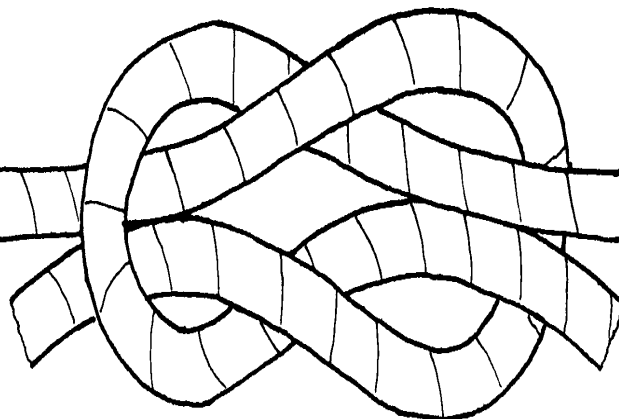
Champlain Bridge

The Champlain Bridge opened to traffic on June 28, 1962 and was named in honour of explorer Samuel de Champlain, who founded Quebec City in 1608. The Champlain Bridge connects Montreal, QC to Sherbrooke, QC and major U.S. cities.



Cote Ste. Catherine Lock

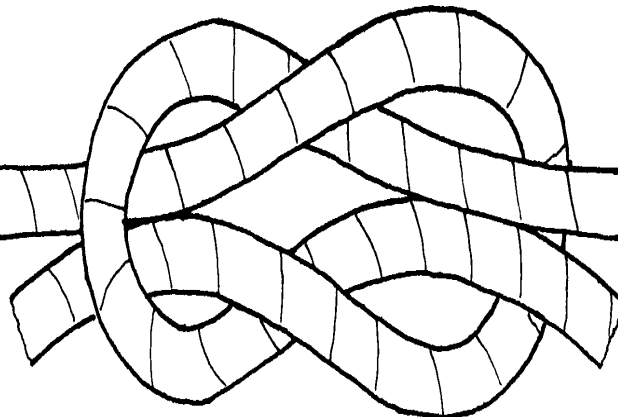
The Cote St. Catherine Lock lifts ships 9.1 m from the Laprairie basin to the level of Lake St. Louis. It allows traffic to bypass the Lachine Rapids.



CPR & Honoré Mercier Bridge

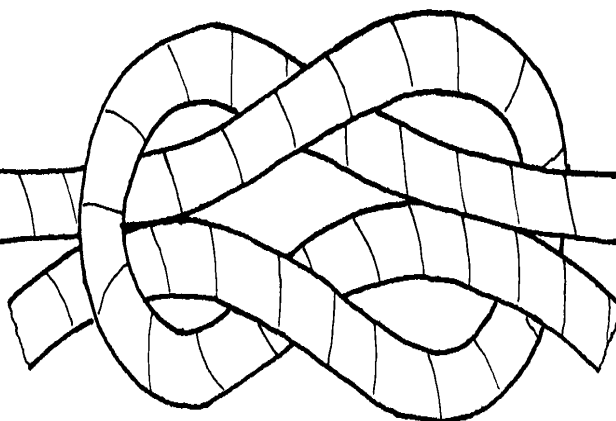
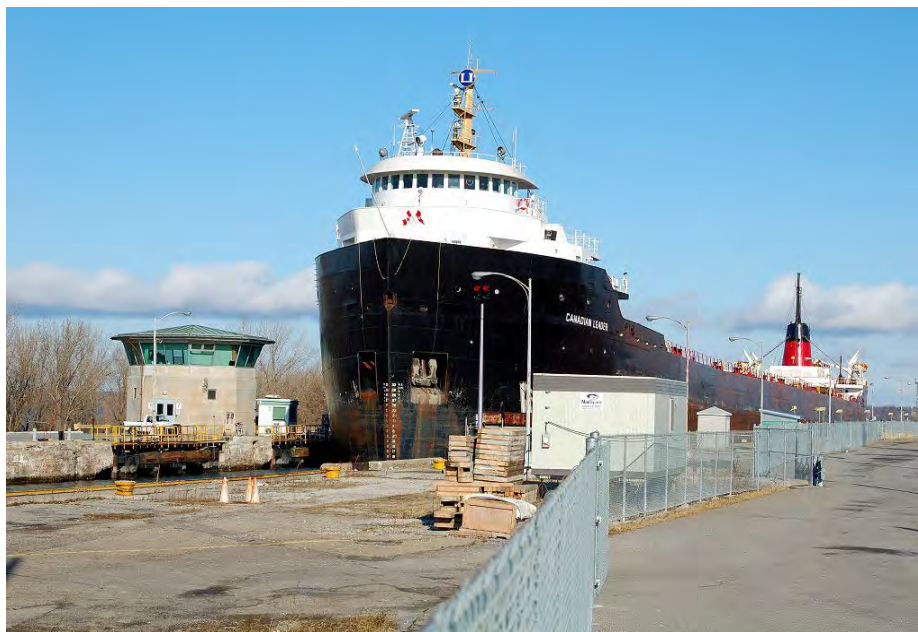
The Honoré Mercier Bridge opened to traffic in 1934 and was named for former Quebec premier the Honourable Honoré Mercier. It spans the St. Lawrence River and Seaway between LaSalle on the Island of Montreal and the Mohawk Territory of Kahnawake on the South Shore.

The Canadian Pacific Railroad bridge spans the St. Lawrence River just upstream the Honoré Mercier Bridge. This bridge has two lift spans to allow marine traffic to pass under.



Beauharnois Locks

These locks bypass the Beauharnois power plant. Each of these two locks lift ships approximately 12.5 m to reach the level of the Beauharnois Canal.

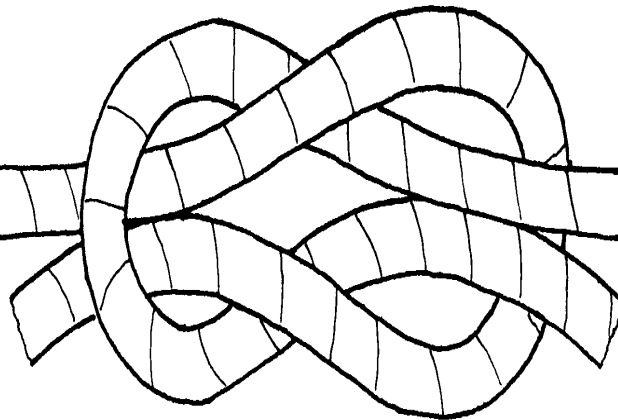


Saint-Louis-de-Gonzague and Valleyfield Bridges

Ships must pass under two additional vehicle bridges, the Saint-Louis-de-Gonzague and Valleyfield, before reaching Cornwall, ON.



The Saint-Louis-de-Gonzague Bridge



FISHERIES AND OCEANS CANADA

OBJECTIVE: The aim of this learning station is to familiarize the cadets with Fisheries and Oceans Canada.

TIME: 30 min

PHASES: 1–4

PRE-ACTIVITY INSTRUCTIONS:

- Assign an instructor to this activity.
- Photocopy the Fisheries and Oceans Canada Fact Sheet located at Appendix 1 for every three cadets.
- Gather the required resources: Flip chart paper and coloured markers.

ACTIVITY INSTRUCTIONS:

1. Divide the cadets into groups of three.
2. Distribute the fact sheet to each group.
3. Have each group develop a poster that illustrates the mandate of Fisheries and Oceans Canada.
4. Have each group display their poster on a wall or table.
5. Have the cadets do a gallery walk of the posters.

Fisheries and Oceans Canada Fact Sheet

Our Role

Fisheries and Oceans Canada (DFO) is the federal organization that manages Canada's fisheries and safeguards its waters.

The Department:

- supports strong economic growth in our marine and fisheries sectors by supporting exports and advancing safe maritime trade;
- supports innovation through research in expanding sectors such as aquaculture and biotechnology; and
- contributes to a clean and healthy environment and sustainable aquatic ecosystems through habitat protection, oceans management, and ecosystems research.

The Department's work is guided by five key pieces of legislation:

- the Oceans Act,
- the Fisheries Act,
- the Species at Risk Act,
- the Coastal Fisheries Protection Act, and
- the Canada Shipping Act, 2001 (Transport Canada-led).



The Canadian Coast Guard, a Special Operating Agency within DFO, is responsible for the programs and services that contribute to the safety, security and accessibility of Canada's waterways.

Our Mission

Through sound science, forward-looking policy, and operational and service excellence, Fisheries and Oceans Canada employees work collaboratively toward the following three strategic outcomes:

- economically prosperous maritime sectors and fisheries;
- sustainable aquatic ecosystems; and
- safe and secure waters.

Our Vision

To advance sustainable aquatic ecosystems and support safe and secure Canadian waters while fostering economic prosperity across maritime sectors and fisheries.

Our Values

The Fisheries and Oceans Canada Values and Ethics Code sets out the expectations for behaviour governing all activities the Department performs to fulfill its mandate. It is binding on all management and employees, and it requires that each DFO employee be familiar with its content.

The Department's values are based on the federal public sector values of:

- Respect for democracy,
- Respect for people,
- Integrity,
- Stewardship, and
- Excellence.



Note. This information was taken from *Fisheries and Oceans Canada – Mission Vision and Values*, <http://www.dfo-mpo.gc.ca/about-notre-sujet/org/vision-eng.htm>

CANADIAN COAST GUARD (CCG)

OBJECTIVE: The aim of this learning station is to familiarize the cadets with the CCG.

TIME: 30 min

PHASES: 1–4

PRE-ACTIVITY INSTRUCTIONS:

- Assign an instructor to this activity.
- Download the Canadian Coast Guard: Overview of Services Recruitment package located at <http://www.ccg-gcc.gc.ca/eng/CCG/Careers/Recruitment-Kit/overview> and print / photocopy one for each cadet.

ACTIVITY INSTRUCTIONS:

1. Read the *What is the Canadian Coast Guard?* section to the cadets.
2. Divide the cadets into four groups.
3. Distribute a handout to each group.
4. Assign two CCG Services to each group, from the following:
 - a. aids to navigation,
 - b. icebreaking,
 - c. search and rescue,
 - d. maritime security,
 - e. environmental response,
 - f. marine communications and traffic services,
 - g. scientific research, and
 - h. waterways management.
5. Have each group create a poster for each service they have been assigned.
6. Have each group display their poster on a wall or table.
7. Have the cadets do a gallery walk of the posters.

TRANSPORT CANADA

OBJECTIVE: The aim of this learning station is to familiarize the cadets with Transport Canada.

TIME: 30 min

PHASES: 1–4

PRE-ACTIVITY INSTRUCTIONS:

- Assign an instructor to this activity.
- Photocopy and cut out the Transport Canada Items located at Appendix 1.
- Gather the required resources: flip chart paper and markers.

ACTIVITY INSTRUCTIONS:

1. Divide the class into two teams and distribute flip chart paper and a marker to each team.
2. Explain the rules of the game to the class, to include:
 - a. for each round, the teams must select a cadet to be the scribe;
 - b. each scribe will be given an item to draw for their team, without writing words, using gestures or speaking;
 - c. the first team to guess the item will be awarded a point.
3. Have each team assign a scribe.
4. Communicate the item to be drawn to each of the scribes, ensuring that the rest of the group does not hear / see.
5. Have the scribes return to their flip chart paper, and ready their marker.
6. Indicate the start time.
7. After the item has been successfully guessed, read the description of where the item fits within Transport Canada's areas of responsibility.
8. Repeat Steps 3–7 until the time is up or all items have been guessed.

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| <p>PORT</p> | <p>Transport Canada oversees Canada's 18 Canada Port Authorities (CPAs); sets and monitors port and marine facility service standards; sets and collects public port fees; dispossesses regional / local and remote ports; and coordinates public notices and consultations.</p> |
| <p>VESSEL SAFETY</p> | <p>Transport Canada sets and enforces the standards and regulations for building, equipping, operating and crewing marine vessels.</p> |
| <p>PLEASURE CRAFT SAFETY</p> | <p>Transport Canada regulates the training and issuance of Pleasure Craft Operator's Competency Card, licensing and registration of pleasure craft, and identification / markings.</p> |

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| <p>CARGO SHIP SAFETY</p> | <p>Transport Canada sets and regulates standards on how to safely carry cargoes of all types.</p> |
| <p>VESSEL REGISTRATION</p> | <p>Transport Canada maintains the Canadian Registry of vessels, which is a system of ownership of vessels, which is similar to the title systems used for land registry.</p> <p>Registration allows for name approval, mortgage registration and proof of ownership except in the case of a vessel registered in the Small Vessel Register. Every vessel other than pleasure craft must be registered.</p> |
| <p>VESSEL INSPECTION</p> | <p>Transport Canada conducts inspections of foreign vessels when entering a sovereign state's waters to ensure compliance with various international maritime conventions.</p> |

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| <p>MARINE TRAINING AND CERTIFICATION</p> | <p>Transport Canada sets the standards for training and certification of all Canadian seafarers. They also work closely with educational institutions that conduct such training.</p> |
| <p>MARINE SECURITY</p> | <p>Transport Canada coordinates the Government of Canada's overall marine security policy; protecting Canada's marine transportation system against unlawful interference, terrorist attacks or use as a means to attack our allies.</p> |
| <p>MARINE ENVIRONMENT PROTECTION</p> | <p>Transport Canada develops and administers policies, regulations and programs to protect the marine environment; reduces the impact of marine pollution incidents in Canadian waters; and promotes the safety of the general public.</p> |

TRANSPORTATION SAFETY BOARD OF CANADA

OBJECTIVE: The aim of this learning station is to familiarize the cadets with the Transportation Safety Board of Canada (TSB).

TIME: 60 min

PHASE: 4

PRE-ACTIVITY INSTRUCTIONS:

- Assign an instructor to this activity.
- Photocopy the Case Study Worksheet located at Appendix 1 (five copies).
- Download / print copies of the following Marine Investigation Reports:
 - Report: M09C009- Tanker *ALGOCANADA*- <http://www.tsb.gc.ca/eng/rapports-reports/marine/2009/m09c0029/m09c0029.asp>
 - Report: M09W0147- Passenger vessel *EXPLORATHOR* <http://www.tsb.gc.ca/eng/rapports-reports/marine/2009/m09w0147/m09w0147.asp>
 - Report: M11W0063- Small Fishing vessel *NEPTUNE II*- <http://www.tsb.gc.ca/eng/rapports-reports/marine/2011/m11w0063/m11w0063.asp>
 - Report: M08C0081- Between the Bulk Carrier *Québécois* and the Bulk Carrier *Capt. Henry Jackman*- <http://www.tsb.gc.ca/eng/rapports-reports/marine/2008/m08c0081/m08c0081.asp>
 - Report: M07N0117- Small Fishing vessel *Sea Urchin*- <http://www.tsb.gc.ca/eng/rapports-reports/marine/2007/m07n0117/m07n0117.asp>

ACTIVITY INSTRUCTIONS:

1. Introduce the TSB by presenting the information below:
 - a. The TSB is an independent agency, created by an Act of Parliament in 1990;
 - b. It advances transportation safety by investigating occurrences and making safety recommendations in the marine, pipeline, rail and air modes of transportation.
2. Divide the cadets into five groups.
3. Distribute a Marine Investigation Report and a Case Study Worksheet to each group.
4. Have the cadets read through their report and complete the Case Study Worksheet.
5. Have each group present their findings to the class using the information gathered on the Case Study Worksheet.



CASE STUDY WORKSHEET

Type of Vessel(s) Involved: _____

Summary of the Incident: _____

Three Recommendations Made by the TSB:

1. _____

2. _____

3. _____

How This Investigation Could Help to Improve the Safety of Marine Travel:

MARINE STEWARDSHIP

OBJECTIVE: The aim of this learning station is to familiarize the cadets with marine stewardship.

TIME: 30 min

PHASES: 1–4

PRE-ACTIVITY INSTRUCTIONS:

- Assign an instructor to this activity.
- Download and print the following documents:
 - a. Canada's Ocean Protection Plan at <https://www.tc.gc.ca/eng/canada-oceans-protection-plan.html>,
 - b. Parks Canada – National Marine Conservation Area System at <http://www.pc.gc.ca/eng/progs/amnc-nmca/pr-sp/index.aspx>,
 - c. Parks Canada – National Marine Conservation Areas of Canada at http://www.pc.gc.ca/progs/amnc-nmca/intro_e.asp,
 - d. Fisheries and Oceans Canada, Sustainable Aquatic Ecosystems at <http://www.dfo-mpo.gc.ca/rpp/2013-14/SO2/so-rs-2-eng.html>, and
 - e. Environment Canada, Canada's Protected Areas at <https://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=478A1D3D-1>.
- Gather the required resources: flip chart paper and markers.

ACTIVITY INSTRUCTIONS:

1. Explain the activity to the cadets, to include:
 - a. each group will be assigned a topic of marine stewardship to review;
 - b. each group will develop a static display on their assigned topic, to include a description of initiatives to sustain / improve the environment; and
 - c. groups will view the static displays.
2. Read to the cadets the marine conservation information located at Appendix 1.
3. Divide the cadets into three groups, assign a topic and provide each group with flip chart paper and markers.
4. Have the groups develop their static display.
5. Have the class do a gallery walk of the static displays.

MARINE CONSERVATION

Marine conservation is the protection of marine species and ecosystems in oceans and seas worldwide. It involves protection and restoration of species, populations and habitats and mitigating human activities such as overfishing, habitat destruction, pollution, whaling and other issues that affect marine life and habitats.

Marine Conservation Techniques

Marine conservation work can be done by enforcing and creating laws, such as the Endangered Species Act and Marine Mammal Protection Act. It can also be done by establishing marine protected areas, studying populations through conducting stock assessments and mitigating human activities with the goal of restoring populations.

Marine Conservation Issues

Current and emerging issues in marine conservation include:

- ocean acidification;
- reducing bycatch in marine fisheries and entanglements in fishing gear;
- establishing marine protected areas;
- regulating whaling;
- protecting coral reefs through studying the problem of coral bleaching;
- addressing the worldwide problem of invasive species; and
- dealing with the problem of shark finning.



Note. This information was taken from *What is Marine Conservation?*, by About.com – Marine Life, retrieved January 17, 2014, from <http://marinelife.about.com/od/conservation/f/marineconservation.htm>