ROYAL CANADIAN SEA CADETS

PHASE FIVE

INSTRUCTIONAL GUIDE

EO C520.01 – EXAMINE CANADIAN NAVAL AND MARITIME EDUCATIONAL AND CAREER OPPORTUNITIES

Total Time: 90 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the completion of this self study package are listed in the lesson specification located in A-CR-CCP-605/PG-001, *Phase Five Qualification Standard and Plan*, Chapter 4. Specific uses for said resources are identified throughout the self study package within the section for which they are required.

Self study packages are intended to be completed by the cadet independently. More information about self study packages can be found in the foreword and preface.

Review the lesson content and become familiar with the material prior to facilitating this lesson.

Photocopy the self study package located at Attachment A for each cadet.

Photocopy the answer key located at Attachment B but **do not** provide it to the cadet.

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

A self study was chosen for this lesson as it allows the cadet to examine in greater detail Canadian naval and maritime educational and career opportunities at their own learning pace. This encourages the cadet to become more self-reliant and independent by focusing on their own learning instead of learning directed by the instructor.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet shall have examined Canadian naval and maritime educational and career opportunities.

IMPORTANCE

It is important for a cadet to examine Canadian naval and maritime educational and career opportunities as it allows them to prepare for their future by introducing them to some choices that are available to them as educational and career paths.

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SELF STUDY PACKAGE INSTRUCTIONS

OBJECTIVE

The objective of this self study package is to have the cadet examine Canadian naval and maritime educational and career opportunities.

RESOURCES

- Self study package, and
- Pen / pencil.

ACTIVITY LAYOUT

Provide the cadet with a classroom or training area suitable to complete the self study package.

ACTIVITY INSTRUCTIONS

1. Provide the cadet with a copy of the self study package located at Attachment A and a pen / pencil.
2. Allow the cadet 90 minutes to complete the self study package.
3. Provide assistance as required to the cadet.
4. Collect the self study package once the cadet has finished.
5. Correct the self study package with the self study package answer key located at Attachment B.
6. Provide feedback to the cadet and indicate whether or not they have completed the Enabling Objective (EO).
7. Return the completed self study package to the cadet for their future reference.
8. Record the result in the cadet's logbook and Cadet Training Record.

SAFETY

Nil.

END OF LESSON CONFIRMATION

The cadet's completion of the self study package will serve as the confirmation of this lesson.

CONCLUSION

HOMEWORK / READING / PRACTICE

Nil.

METHOD OF EVALUATION

Nil.

CLOSING STATEMENT

There are many options available to individuals who wish to pursue a maritime career. Both government subsidized educations and programs at post secondary institutions are building blocks for future success in

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the maritime field. By examining the options available, cadets will be better prepared should they decide on a career involving the sea.

INSTRUCTOR NOTES / REMARKS

Nil.

REFERENCES

C1-189 Fisheries and Oceans Canada. (2008). *Canadian Coast Guard*. Retrieved October 20, 2009, from http://www.ccg-gcc.gc.ca

C1-232 ISBN 0-07-144851-9 Heitzmann, R. (2006). *Opportunities in marine science and maritime careers*. New York, NY: McGraw-Hill.

C1-236 Department of National Defence. (2009). *Canadian Forces Recruiting–Job Explorer*. Retrieved October 20, 2009, from http://www.forces.ca/html/jobexplorer_en.aspx

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Canadian Naval & Maritime Education & Career Opportunities



SECTION 1: MARITIME EDUCATIONAL OPPORTUNITIES

SECTION 2: GOVERNMENT MARITIME CAREER OPPORTUNITIES

SECTION 3: PRIVATE SECTOR MARITIME CAREER OPPORTUNITIES

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SECTION 1
MARITIME EDUCATIONAL OPPORTUNITIES

Canadians have many maritime educational opportunities available to them. Many of the best maritime educations available in the world are offered in Canada. Educational opportunities can fall into three main categories:

- Canadian Forces (CF) educational opportunities,
- Canadian Coast Guard (CCG) educational opportunities, and
- civilian educational opportunities.

CF EDUCATIONAL OPPORTUNITIES

The CF offers several subsidized education plans. Subsidized education means that your education is paid for by the CF in return for a specified period of service. Once this period of service is complete, you have the option of continuing your service in the CF or choosing to pursue a career in another government department or the private sector. The CF offers education plans at the undergraduate and technician / technologist level. This is based on whether you are enrolling in a job that is performed by an officer or a non-commissioned member (NCM).



Did you know?

The CF refers to specific jobs as trades. Each trade is assigned a Military Occupational Structure Identification (MOSID) number. The Cadet Instructors Cadre (Navy) officers' MOSID is 00232-01.

The Regular Officer Training Program (ROTP)

- The Regular Officer Training Program (ROTP) is an entry program to the CF.
- A person enrolling in the ROTP is provided an undergraduate education free of charge and is responsible for four years service to the CF when their education is complete.
- Undergraduate degrees are completed at the Royal Military College of Canada (RMC); however, in some instances, the degree can be completed at a civilian university.
- RMC offers many of the same undergraduate degree programs that are available at most Canadian universities.



Do you know anyone who attended RMC? What degree program did they complete?

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Note. From Department of National Defence, 2009, Royal Military College of Canada. Retrieved November 18, 2009, from http://www.rmc.ca/hp-pa-002.jpg

Figure A-1 RMC Students

More information about degree programs offered at RMC can be found at

http://www.rmc.ca

The Continuing Education Officer Training Program (CEOTP)

- The Continuing Education Officer Training Program (CEOTP) is an entry plan to the CF.
- Under the CEOTP, a person with some undergraduate education is enrolled in an in-demand trade and agrees to complete their university degree within a specified amount of time, usually nine years.
- This offers the entrant the ability to complete their degree with CF funding while being employed full-time by the CF.
- Entry into a trade within the CEOTP is very selective and only offered when no other applicants to that trade are available to meet recruiting needs.

The Non-Commissioned Member Subsidized Education Plan (NCM-SEP)

- The Non-Commissioned Member Subsidized Education Plan (NCM-SEP) is a subsidized technician / technologist education level entry program for NCM trades.
- Under the NCM-SEP, a person is enrolled into a trade in the CF and provided a free technician / technologist program at a civilian college or trade school.
- Upon completion, the student is required to serve two months for each month of academic funding beginning on the graduation date from college.
- Once this military service is complete, you can continue with a career in the military or pursue a civilian career.

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***Activate Your Brain #1*:**

Name two entry plans for the CF. Explain how they differ.

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CCG EDUCATIONAL OPPORTUNITIES

The CCG offers several subsidized educational programs at the Canadian Coast Guard College (CCGC) in Sydney, N.S. The CCGC was opened in 1965 on the abandoned Point Edward Naval Base and was later moved to nearby Westmount. It provides training for new recruits of the CCG through its subsidized Officer Training Program (OTP) as well as ongoing professional development to serving members of the CCG.



Did you know?

Point Edward Naval Base was the first home of the Sea Cadet Summer Training Centre, HMCS ACADIA.



Do you know anyone who attended CCGC? Did they remain with the CCG or are they employed somewhere else now?

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The CCG OTP

- The OTP is a four-year program designed to train ship's officers of the CCG.
- Marine Navigation and Marine Engineering are training programs offered under the CCG OTP.
- Training is divided into five phases which include both time ashore at the college mixed with time at sea on a CCG vessel.
- Upon completion, a student enrolled in the CCG OTP is required to serve a minimum of four years as a ship's officer, with the option to remain employed full-time.

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Note. From Fisheries and Oceans Canada, 2009, Ships Officers and Crew. Retrieved November 18, 2009, from http://www.ccg-gcc.gc.ca/eng/CCG/Carers_Home

Figure A-2 CCG OTP Students

The Marine Communications and Traffic Services (MCTS) Program

- The MCTS program is a 25-week program designed to train officers to coordinate traffic on the water at all times, provide continuous monitoring of all marine radio frequencies, respond to distress calls and communicate the needs of ships to those on shore.
- Graduates of the MCTS program are offered employment at any one of the 22 MCTS centres across Canada.

The Marine Electronic Technologist (EL) Development (MELDEV) Program

- The MELDEV program is designed to recruit individuals who already hold a diploma in electronic technology to work for the CCG.
- It consists of a three-year paid training program designed to indoctrinate electronic technologists to the maritime aspects of the CCG and provide them with the skills required to perform their job on board a vessel.
- Upon successful completion, participants hold a full-time position with the CCG.



More information about programs offered at the CCGC can be found at http://www.ccg-gcc.gc.ca/eng/CCG/Careers



***Activate Your Brain #2*:**

Name three programs offered at the CCGC. How long does each program take to complete?

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CIVILIAN EDUCATIONAL OPPORTUNITIES

Many civilian educational institutions offer maritime programs designed to provide the individual with the education required to be employed in a maritime career. These programs are designed to meet industry standards and allow graduates to be employed in various positions on board a ship. Other programs are focused on the shore aspect of maritime careers, such as shipbuilding, aquaculture and naval architecture. Here is a partial listing of some civilian education institutions and the programs they offer:

Fisheries and Marine Institute of Memorial University of Newfoundland (St John's, N.L.)

- Diplomas of Technology include:
  - Marine Engineering,
  - Marine Engineering Systems Design,
  - Marine Environmental,
  - Nautical Science, and
  - Naval Architecture.
- Joint Diploma of Technology / Bachelor of Technology includes:
  - Ocean Instrumentation.
- Technician Diplomas include:
  - Remotely Operated Vehicles (ROV).
- Technical Certificates include:
  - Offshore Steel Fabrication,
  - Bridge Watch,
  - Fire Rescue,
  - Marine Diesel Mechanic, and
  - Fish Harvesting.
- Advanced Diplomas include:
  - Integrated Coastal and Ocean Management,
  - Sustainable Aquaculture, and
  - Water Quality.
- Degrees include:
  - Bachelor of Maritime Studies,
  - Bachelor of Technology, and
  - Master of Marine Studies (Fisheries Resource Management).

Institut Maritime du Quebec (Rimouski, Que.)

- Diplomas of Technology includes:
  - Naval Architecture.

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- Technician Diplomas include:
  - Marine Engineering, and
  - Transportation Logistics.
- Technical Certificates include:
  - Navigation, and
  - Professional Diving.

Georgian College–Owen Sound Campus (Owen Sound, Ont.)

- Marine Engineering Technology, and
- Marine Technology–Navigation.

British Columbia Institute of Technology–Marine Campus (Vancouver, B.C.)

- Diploma of Technical Studies include:
  - Marine Engineering, and
  - Nautical Science.
- Technical Certificates include:
  - Bridge Watchman,
  - Chief Mate,
  - Watchkeeping Mate Near Coastal (WKMNC),
  - Master 150 Gross Tonnage (GT) Domestic,
  - Master 500 GT Domestic,
  - Master 3000 GT Domestic,
  - Marine Engineer Fourth Class,
  - Marine Engineer Third Class,
  - Marine Engineer Second Class, and
  - Marine Engineer First Class.



More information about programs offered at the civilian marine institutes can be found at:

- Marine Institute–http://www.mi.mun.ca/programs
- Institut Maritime du Quebec–http://imq.qc.ca
- Georgian College–http://www.georgianc.on.ca/campuses/owensound
- British Columbia Institute of Technology–http://www.bcit.ca/transportation/marine

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***Activate Your Brain #3*:**

List some marine certifications that can be obtained through attending a civilian educational institute.

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SECTION 2
GOVERNMENT MARITIME CAREER OPPORTUNITIES

A career in a maritime-related field can be challenging and rewarding. The government of Canada is one possible employer, offering many varied types of jobs. They range from a shore-based research position to one that offers you a chance to sail around the world. Government maritime career opportunities can be divided into three main categories:

- Military career opportunities,
- CCG career opportunities, and
- Fisheries and Oceans Canada (DFO) career opportunities.

The CF offers a range of maritime career opportunities through Canada's Navy. Naval trades are divided into officer trades and NCM trades. NCMs in the navy are the operators and technicians who use and maintain the various systems used on board a naval vessel. Officers carry out command and control, bridge watchkeeping and act as managers on board. The following are currently offered trades within the naval environment.



Do you know anyone who joined the Canadian Navy? Create a list of who they are and what trade they are.

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Naval Officer

Maritime Surface and Sub-Surface



Note. From Department of National Defence, 2009, Canadian Forces Recruiting– Navy. Retrieved November 17, 2009, from http://www.forces.ca/html/index.aspx?m=0&lang=en&sid=228&sm1=1&sm2=1&photo=14

Figure A-3 MARS Officer

The primary function of Maritime Surface and Sub-Surface (MARS) officers is to be a part of the crew of the seagoing combatant units of Maritime Command. They are responsible for the command, coordination and control of military maritime operations that require the ability to lead and make decisions, often under adverse conditions. They must possess knowledge and expertise in a wide range of activities relating to the exercise of sea power, including maritime strategy, tactics and procedures in the operation of ships, submarines and aircraft, maritime sensors, combat information and weapons systems. MARS officers also provide input into the design, procurement and evaluation of ships or systems and perform staff training and administrative duties.

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Marine Systems Engineering



Marine Systems Engineers are responsible for the readiness, operation and maintenance of propulsion and ancillary systems, power generation and distribution, auxiliary systems, ship's service systems, ship and machinery control systems, hull structure, ship's stability, damage control, and the integration of these systems. They analyze the state of their systems, equipment and personnel, predict their requirement for naval operations and advise Command accordingly.

Note. From Department of National Defence, 2009, Canadian Forces Recruiting–Job Explorer. Retrieved November 17, 2009, from http://www.forces.ca/html/index.aspx?=0&lang=en&sid=81&sm1=2&sm2=0&content=81&jId=88&photo=04

Figure A-4 MS ENG Officer

Naval Combat Systems Engineering



Naval Combat Systems Engineers (NCS ENG) are responsible for the maintenance and operational readiness of combat systems in ships and submarines and for advising Command accordingly. They are responsible for the leadership and well-being of a large team of highly-trained technical professionals who perform the systems analysis, fault-finding and maintenance to assure their equipment's peak performance.

Note. From Department of National Defence, 2009, Canadian Forces Recruiting–Job Explorer. Retrieved November 17, 2009, from http://www.forces.ca/html/index.aspx?=0&lang=en&sid=81&sm1=2&sm2=0&content=81&jId=87&photo=04

Figure A-5 NCS ENG Officer

Officer (Tri-elemental)

The following officer trades are not exclusively related to a maritime career in the navy; however, CF personnel who pursue them as a career are entitled to belong to the naval element. They include:

- bioscience,
- chaplain,
- health care administration,
- intelligence,
- legal,
- logistics,
- medical,
- military police,
- nursing,

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- personnel selection,
- pharmacy,
- physiotherapy,
- public affairs,
- social work, and
- training development.

Naval NCM

Boatswain



Note. From Department of National Defence, 2009, Canadian Forces Recruiting–Job Explorer. Retrieved November 17, 2009, from http://www.forces.ca/html/index.aspx?m=0&lang=en&sid=81&sm1=2&sm2=0&content=81&jId=181&photo=04

Figure A-6 BOSN

Boatswains (BOSNs) in the CF are the seamanship specialists. The range of their activities and supervisory responsibilities is wider than in most other sea occupations. They operate and maintain shipboard equipment associated with cargo handling and intership transfer of personnel, fuel and materiel at sea. BOSNs also operate and maintain the ship's anchor and cable equipment for such tasks as towing, the launch and recovery of the ship's boats, and rescue operations. They operate and navigate small craft in enclosed waters, including a ship's boats, auxiliary vessels and tenders. BOSNs perform tasks associated with a ship's rigging, rope work and life-saving equipment. They organize and conduct activities associated with the storage, training and use of small arms, demolitions and ammunition. They plan, organize and conduct drill and ceremonies, such as ceremonial salutes, honour guards and burials at sea. BOSNs assist and supervise deck crews in cleaning, reserving and painting the ship and its equipment. They operate equipment, such as outboard motors, industrial sewing machines, forklifts and cranes on replenishment ships. BOSNs coordinate watchkeeping duties at sea and in harbour.

Hull Technician



Note. From Department of National Defence, 2009, Canadian Forces Recruiting–Job Explorer. Retrieved November 17, 2009, from http://www.forces.ca/html/index.aspx?m=0&lang=en&sid=81&sm1=2&sm2=0&content=81&jId=321&photo=02

Figure A-7 H TECH

Hull Technicians (H TECH) maintain the ship's structure, stability, plumbing, heating, air-conditioning, damage control and firefighting equipment. They are the ship's carpenter, welder, metal worker and damage control expert.

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Marine Electrician



Note. From Department of National Defence, 2009, Canadian Forces Recruiting–Job Explorer. Retrieved November 17, 2009, from http://www.forces.ca/html/index.aspx?m=1&lang=en&sm1=2&sm2=0&sid=81&jId=332&b0=0&photo=01

Figure A-8 MAR EL

Marine Electricians (MAR EL) are the members of a ship's engineering department responsible for the operation and distribution of electrical power throughout the ship. MAR ELs assist in maintaining the electrical and electronic equipment associated with the ship's power generation, engineering systems and propulsion systems. As well, they are responsible for ships' navigational and domestic lighting and electrical services on board.

Marine Engineering Mechanic



Note. From Department of National Defence, 2009, Canadian Forces Recruiting–Job Explorer. Retrieved November 17, 2009, from http://www.forces.ca/html/index.aspx?=0&lang=en&sid=81&sm1=2&sm2=0&content=81&jId=312&photo=04

Figure A-9 MAR ENG MECH

Marine Engineering Mechanics (MAR ENG MECH) operate and monitor the operation of a ship's mechanical equipment. These mechanical systems are diverse and complex; the technical aspect of this job is challenging. Under supervision, they inspect, test, maintain, repair, modify and install equipment associated with the trade.

Naval Combat Information Operator



Note. From Department of National Defence, 2009, Canadian Forces Recruiting–Job Explorer. Retrieved November 17, 2009, from http://www.forces.ca/html/index.aspx?=0&lang=en&sid=81&sm1=2&sm2=0&content=81&jId=275&photo=02

Figure A-10 NCI OP

Naval Combat Information Operators (NCI OP) are responsible for the operation of all shipboard surveillance radars and associated equipment of the Command Control Communications Computers Intelligence Surveillance and Recognizance (C4ISR) systems. As members of the ship's combat information organization, NCI OPs assist and advise the ship's command on navigation, anti-air warfare, anti-surface warfare and anti-submarine warfare.

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Naval Communicator



Naval Communicators (NAV COMM) are responsible for establishing and managing all external voice, radio-teletype and data circuits, and provide real-time tactical information in support of operations. When employed in shore establishments, NAV COMMs may work in a wider variety of duties, such as providing communications support to ships and shore establishments, performing duties to assist in the communications flow in naval radio stations, or employed as instructors in recruit, leadership or communication schools.

Note. From Department of National Defence, 2009, Canadian Forces Recruiting–Job Explorer. Retrieved November 17, 2009, from http://www.forces.ca/html/index.aspx?m=0&lang=en&sid=81&sm1=2&sm2=0&content=81&jId=277&photo=03

Figure A-11 NAV COMM

Naval Electronic Sensor Operator



Naval Electronic Sensor Operators (NES OP) are responsible for the operation of radar and radio detection devices, radar jamming systems and decoys, and gun / missile-firing equipment carried on major naval warships. As members of the ship's combat team, they aid in detecting, locating and identifying friendly and enemy submarines, ships and aircraft. They also aid in the engagement of the enemy and in the defence of their own ship from all threats.

Note. From Department of National Defence, 2009, Canadian Forces Recruiting–Job Explorer. Retrieved November 17, 2009, from http://www.forces.ca/html/index.aspx?m=1&lang=en&sm1=2&sm2=0&sid=81&jId=276&b0=0&photo=01

Figure A-12 NES OP

Naval Electronics Technician (Communications)



Naval Electronics Technician (Communication) (NE TECH[C]) personnel repair and maintain all shipboard internal and external communications equipment and systems, including radio navigation aids and beacons.

Note. From Department of National Defence, 2009, Canadian Forces Recruiting–Job Explorer. Retrieved November 17, 2009, from http://www.forces.ca/html/index.aspx?m=0&lang=en&sid=81&sm1=2&sm2=0&content=81&jId=284&photo=02

Figure A-13 NE TECH (C)

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Naval Electronics Technician (Radar)



Note. From Department of National Defence, 2009, Canadian Forces Recruiting–Job Explorer. Retrieved November 17, 2009, from http://www.forces.ca/html/index.aspx?m=1&lang=en&sm1=2&sm2=0&sid=81&jId=285&b0=0&photo=01

Figure A-14 NE TECH (R)

Naval Electronics Technician (Radar) (NE TECH[R]) personnel repair and maintain all shipboard electronic equipment used to detect ships and aircraft; provide target and tracking information to the ship's surface and air weapon systems; and intercept, analyze, identify and jam electronic signals.

Naval Electronics Technician (Sonar)



Note. From Department of National Defence, 2009, Canadian Forces Recruiting–Job Explorer. Retrieved November 17, 2009, from http://www.forces.ca/html/index.aspx?=0&lang=en&sid=81&sm1=2&sm2=0&content=81&jId=283&photo=02

Figure A-15 NE TECH (S)

Naval Electronics Technician (Sonar) (NE TECH[S]) personnel repair and maintain all shipboard electronic equipment used to detect ships and submarines; provide target and tracking information to the ship's sub surface weapon systems; and intercept, analyze, and identify underwater electronic signals.

Naval Weapons Technician



Note. From Department of National Defence, 2009, Canadian Forces Recruiting–Job Explorer. Retrieved November 17, 2009, from http://www.forces.ca/html/index.aspx?=0&lang=en&sid=81&sm1=2&sm2=0&content=81&jId=065&photo=02

Figure A-16 NW TECH

Naval Weapons Technicians (NW TECH) are electronic and electro-mechanical technicians responsible for the maintenance, repair and operation of all shipboard weapon systems and hydraulic cranes. As well, NW TECHs are responsible for the safe handling, storage and accounting of all onboard ammunition, explosives and pyrotechnics.

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Sonar Operator



Note. From Department of National Defence, 2009, Canadian Forces Recruiting–Job Explorer. Retrieved November 17, 2009, from http://www.forces.ca/html/index.aspx?m=0&lang=en&sid=81&sm1=2&sm2=0&content=81&jId=278&photo=02

Figure A-17 SONAR OP

The Sonar Operator (SONAR OP) is responsible for the operation of active and passive acoustic equipment, communication equipment, noise monitoring, recording and bathythermograph equipment, and acoustic range prediction systems. As an integral member of the operations team, the SONAR OP searches, detects, tracks, localizes, classifies, correlates and disseminates acoustic information.

Steward



Note. From Department of National Defence, 2009, Canadian Forces Recruiting–Job Explorer. Retrieved November 17, 2009, from http://www.forces.ca/html/index.aspx?m=0&lang=en&sid=81&sm1=2&sm2=0&content=81&jId=862&photo=02

Figure A-18 STWD

Stewards (STWDs) are members of the Canadian Navy whose job is primarily the provision of hospitality services within the navy. A STWDs duties are varied and range from food and beverage services to financial management and administration. They are not cooks, although they may work alongside cooks; some food preparation is part of their duties.

NCM (Tri-elemental)

The following NCM trades are not exclusively related to a maritime career in the Canadian Navy; however, CF personnel who pursue them as a career are entitled to belong to the naval element. They include:

- biomedical electronics technologist,
- communicator research operator,
- cook,
- intelligence operator,
- medical laboratory technologist,
- medical radiation technologist,
- medical technician,
- military police,
- musician,

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- resource management support clerk, and
- supply technician.



If you had your choice of any trade in the Canadian Navy, which one would you choose?



***Activate Your Brain #4*:**

List three officer trades and three NCM trades that are available as career options within the Canadian Navy.

_____ _____
_____ _____
_____ _____



More information about CF naval careers can be found at

http://www.forces.ca/html/jobexplorer_en.aspx

CCG CAREER OPPORTUNITIES

CCG vessels are operated by ships' officers and ships' crew. Ships' officers require certification which is obtained through Transport Canada, Marine Safety Branch with the exception of logistics officers and electrical officers who are certified internally. Becoming a navigation or engineering officer in the CCG can be done through the CCGC located in Sydney, N.S.; by working up through the ships' crew's ranks combined with attending Marine Training Institutes; or by attending another accredited marine institute. Ships' crews are not required to possess a marine certificate and are employed through Regional coast guard offices. The following are currently offered positions within the CCG.



Do you know anyone who joined the CCG? Create a list of who they are and what position they hold.

_____
_____
_____

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Ships' Officers

Navigation Officer



Note. From "Ice Heros", by H. Gordon, 2006, Canadian Geographic, Copyright 2006. Retrieved November 19, 2009, from http://www.canadiangeographic.ca/magazine/MA06/indepth/images/pic_people.jpg

Figure A-19 Navigation Officer

Navigation officers, under the authority of the Commanding Officer (CO), coordinate the vessel's operations. They must understand safe navigation procedures; as well as an understanding of the functions of the ship's navigation equipment. Navigation officers are responsible for the safety of the ship, its crew and any other persons on board the vessel. The Navigation officer also directly supervises and coordinates the activities of crew working on the bridge. The CO (the highest level of Navigation officer) is in overall charge and has the responsibility for the entire vessel.

Engineering Officer



Note. From "Public Photo Galleries", 2009, Great Lakes & Seaway Shipping, Copyright 1995-2009 by Boatnerd.com. Retrieved November 19, 2009, from http://www.boatnerd.com/pictures/special/ccggriffon/griffon2003_1230BS.jpg

Figure A-20 Engineering Officer

Engineering officers, under the direction of the chief engineering officer, are responsible for the operation and maintenance of the vessel's propulsion machinery and auxiliary equipment. These systems include the electrical generation systems, pumping and transfer systems, hydraulic systems, refrigeration systems, control systems, water treatment systems, etc. The engineering officer also directly supervises and coordinates the work of other engine room personnel. Engineers must be able to quickly troubleshoot broken equipment and conduct the necessary repairs.

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Electrical Officer



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Figure A-21 Electrical Officer

Electrical officers, under the direction of the chief engineering officer, are responsible for the operation and maintenance of the vessel's electric and electronic equipment. The electrical officer must know how to read and interpret the various types of shipboard electrical plans and diagrams, and be aware of the various electrical standards that may apply. Electrical officers must be able to quickly troubleshoot broken electrical equipment and make the necessary repairs.

Logistics Officer



Note. From "Public Photo Galleries", 2009, Great Lakes & Seaway Shipping, Copyright 1995-2009 by Boatnerd.com. Retrieved November 19, 2009, from http://www.boatnerd.com/pictures/special/ccggriffon/griffon2003_1230AX.jpg

Figure A-22 Logistics Officer

Logistics officers are responsible for providing logistics support to all shipboard personnel in the areas of hotel services, ship's administration and non-public funds, as well as managing personnel, materiel management, financial management and ship's administration.

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Ships' Crew

Deckhand



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Figure A-23 Deckhand

This position entails duties, such as standing a watch and security duties, and the operation of small craft and deck machinery. Deckhands are also responsible for maintaining small boats, ropes and equipment, and are involved in a variety of activities related to the DFO programs, such as fisheries enforcement, search and rescue, maintenance of aids to navigation and environmental response.

Twinehand



Note. From "Blog", 2009, Jim Schofield Photography, Copyright 2009 by J. Schofield. Retrieved November 19, 2009, from http://www.jimschofield.com/blog/images/netmending-7.jpg

Figure A-24 Twinehand

This position is primarily in fishing research involving the operation and maintenance of fishing gear. Standing a watch and security duties are also required, as well as the operation and maintenance of small boats. Twinehands may also be involved in a variety of activities related to the DFO programs, such as fisheries enforcement, search and rescue, maintenance of aids to navigation and environmental response.

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Engine Room Rating / Technician



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Figure A-25 Engine Room Rating / Technician

The engine room rating / technician assists the engineering officer with the operation, maintenance and repair of the vessel's propulsion machinery and auxiliary equipment. While machinery is in operation, the engine room rating / technician monitors the equipment checking gauges and recording readings, ensuring that the machinery is operating within normal parameters.

Steward



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Figure A-26 Steward

This position is responsible for housekeeping duties on board the vessel, as well as assisting with the loading of supplies, etc. Stewards are also involved in food service, which may involve serving meals or assisting with galley (kitchen) responsibilities. Stewards may also be involved in DFO program activities, such as search and rescue, environmental response, etc.

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Cook



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Figure A-27 Cook

The ships' cook prepares and carries out the cooking of food on board the vessel. The cook has the responsibility for other staff in the galley (kitchen) and organizes and manages all the activities of the galley and its personnel (the assistant cooks) when required. The cook requires the knowledge necessary to develop a variety of healthy menus.

***Activate Your Brain #5*:**

List three ships' officer and three ships' crew positions that are available as a career option in the CCG.

_____ _____
_____ _____
_____ _____

More information about CCG careers can be found at http://www.ccg-gcc.gc.ca/eng/CCG/Careers_Home

DFO CAREER OPPORTUNITIES

In addition to a career serving in Canada's Navy or CCG, the opportunity exists to be employed as a civilian federal employee of DFO. DFO employees sometimes work closely with members of the CF and CCG to carry out their duties, from patrolling fishing grounds aboard a warship or arctic ice research conducted from a CCG vessel. DFO offer careers in the following main areas:

Do you think it's important to protect our marine environment?

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Aquaculture

- The aquaculture section of DFO monitors the farming of freshwater fish, saltwater fish and aquatic plants.
- Four main species of saltwater fish are farmed in Canada including Atlantic, coho and chinook salmon and steelhead trout.
- Four main species of freshwater fish are farmed in Canada including rainbow and brook trout, Arctic char and tilapia.
- Four main species of shellfish are farmed in Canada including mussels, oysters, clams and scallops.
- Marine plants are also farmed in Canada including, nori, sea lettuce, giant kelp, bull kelp and several types of algae.

Aquatic Species / Species at Risk

- DFO investigate, observe, monitor, and research all aquatic species that inhabit Canadian waters.
- By monitoring these plants and animals, they can determine which species are at risk of becoming endangered or extinct.

Fisheries Management

- The fisheries management section of DFO works to provide Canadians with a sustainable fishery resource that provides for an economically viable and diverse industry.
- Protection and conservation of fisheries resources are key components of fisheries management.
- There are three main types of fisheries in Canada which include Aboriginal, commercial and recreational.
- Fisheries management include policies that protect our resources from both domestic and foreign overfishing.

Fish Habitat Management

- The fish habitat management section of DFO works to protect and conserve fish habitat in support of Canada's coastal and inland fisheries resources.
- They conduct environmental assessments before DFO makes any regulatory changes to fish habitat provisions of the Fisheries Act.
- They promote environmental stewardship and fish habitat protection through public education and school programs.

Marine Navigation

- On December 12, 2003, it was announced that the CCG would be restructured as a Special Operating Agency (SOA) of DFO.
- The CCG owns and operates the federal government's civilian fleet and provides important maritime services to Canadians.

Oceans

- The oceans section of DFO works to mange the impact of all human activities on Canada's oceans.
- They monitor changing environmental trends that affect our oceans, such as global warming, and environmental pollution.
- They regulate protected marine areas that may be susceptible to damage.

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Science

- The science section of DFO supports scientific research into all areas of fisheries and oceans.
- They employ staff at institutes and laboratories across Canada who conduct marine scientific experiments and research projects.
- They work collaboratively with many colleagues at other academic institutions, both nationally and internationally.
- They provide much of the scientific evidence that guide and influence the other sections of DFO in their policy and regulation decisions.



***Activate Your Brain #6*:**

Describe the purpose of the fish habitat management section of DFO.

_____

_____

_____



More information about DFO careers can be found at http://www.dfo-mpo.gc.ca/

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SECTION 3
PRIVATE SECTOR MARITIME CAREER OPPORTUNITIES

There are great maritime careers provided by private sector companies and organizations within Canada and the world. Many of these careers are interrelated and interdependent on one another as well as with government careers. For example, those in commercial fishing work with marine biologists, those in maritime transportation rely on harbour pilots and naval personnel often collaborate on research with oceanographers studying some aspect of the seas.



Why do you think maritime careers are so interrelated?

AQUARIA-RELATED CAREERS

Aquariums are one of the most attention-getting facilities related to the oceans. They not only entertain visitors, but they also serve a vital educational function and provide many exotic and fun careers.

- Aquarists maintain all aspects of the aquatic exhibits; this includes maintaining water quality, feeding the fish, cleaning the tanks and related tasks, such as record keeping.
- Aviculturists work with the marine birds and maintain all aspects of their displays if an aquarium contains these types of exhibits.
- Marine educators give presentations to visitors and teach classes.
- Herpetologists manage reptile and amphibian collections at aquariums.
- Veterinarians and veterinary technicians oversee the health of the animals.
- Marine mammal trainers are perhaps the most popular and most desired of the aquaria-related careers. They often come from a psychology and / or biology background and are responsible for the many hours of training that go into preparing the animals for the shows they perform.

CRUISE SHIP CAREERS

The cruise ship industry has experienced dramatic growth over the past number of years with several million passengers currently cruising and revenues in the billions. Jobs are available for those who love travelling, meeting new people and going to exotic destinations.

Aboard cruise ships, two categories of careers exist: those that deal with the ship, and those that are related to the cruise-hotel aspect of the pleasure vessel.

The crew who deal with navigation, propulsion, maintenance, etc could be comparable to those of any maritime vessel. They would be trained to deal with the increased safety requirements of having so many passengers aboard as compared to other vessels.

Crew who deal with the passengers often hold positions like those at resorts on land, such as:

- bartender,
- cosmetician / esthetician,
- concierge,
- steward, and
- chef.

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Did you know?

The Oasis class cruise ships *Oasis of the Seas* and *Allure of the Seas* owned by Royal Caribbean International Cruise Ships are the largest passenger ships in the world as of 2009. They weigh 225 282 GT, measure 360 m in length, 60.5-m beam and rise 72 m above the waterline. They carry 6 296 passengers total capacity. In comparison, a Halifax Class–Multi-Role Patrol Frigate is one forty-seventh the weight, only one third the length, less than a quarter the beam and carry 225 crew.



Note. From "Oasis of the Seas", 2009, Flickr. Retrieved November 23, 2009, from http://www.flickr.com/photos/ereine/4057624571/

Figure A-28 Oasis Class Cruise Ship

OCEANOGRAPHY AND THE MARINE SCIENCES

Oceanography involves the utilization of many sciences applied to the study of the oceans. It attempts to explain processes taking place in the ocean through the principles of other disciplines, such as biology, cartography, chemistry, geography, geology, mathematics, medicine, meteorology, physics, zoology, as well as others. Most oceanographers have a doctoral degree while marine technicians (the people who assist the oceanographer) often need a masters degree. Some specific oceanographic careers include the following:

- Atmospheric oceanographers, also called marine meteorologists, study the relationship between the ocean and the atmosphere.
- Biological oceanographers, probably the best known field to the public, study the plant and animal life in the ocean.
- Chemical oceanographers seek to understand the chemical reactions taking place in the sea.
- Geological oceanographers, also known as marine geologists, investigate the ocean's floor and shoreline, studying sediments, mineral content and oil location.
- Physical oceanographers investigate the physical properties of the ocean, such as the chemical properties of seawater, currents, tides, waves, and the relationship between the ocean and the atmosphere.
- Oceanographic engineers design and build systems used in marine research and operations.

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FISHING

Often regarded as one of the oldest and most honourable of all professions, commercial fishing has certainly featured prominently in Canada's history. Fishing has long been a family business in which the trade and its secrets are handed down from parent to child. Fishing is normally divided into inshore and offshore fishing, with many species being caught during both. In recent years, fishing has become the centre of many controversies, ranging from disputes over fishing territory, accusations of overfishing, disputes over the management of catches and quotas to the environmentally destructive use of drift nets.

COMMERCIAL DIVING

People's interest in the world of water extends to the world beneath the sea. The exotic landscape of hot vents, unusual fish and magnificent beauty is explored through diving. Most diving; however, involves tedious manual labour related to commercial enterprises. The field of underwater diving is divided into four basic areas:

- skin diving, in which you hold your breath while diving;
- snorkelling, in which you use a breathing tube;
- surface air supply, in which air is pumped to you through a hose from the surface; and
- SCUBA (Self-Contained Underwater Breathing Apparatus), in which you utilize a breathing device mounted to your back.

Most commercial divers are involved in specific skill areas or work situations, such as:

- anchor and cable inspection,
- demolition,
- dive resort activities,
- exploration drilling,
- harbour and deck construction,
- police activities,
- scientific and academic research,
- search and rescue,
- underwater welding and cutting, and
- underwater photography and videography.

MARITIME TRANSPORTATION

Careers in maritime transportation can be quite varied and range from working a portside job to one afloat. Most of the jobs are similar in nature to those of the CCG due to the similarities of operating ocean-going vessels.

Most portside careers are involved in the movement of cargo and maintenance of ships.

- Stevedores (longshoremen) work in crews and load and unload ships. Much of the stevedore's work was previously heavy human labour but now many operate heavy equipment, such as forklifts and cranes.
- Car loaders perform work related to the loading and unloading of railroad cars, trucks, barges and containers.
- Marine carpenters lash and strap cargo using chain, wire or rope. They repair shipping pallets and perform all wood-related work.
- Ship cleaners perform cleaning operations in the ship's hold. They wash surfaces, repaint, clean oil tanks, take inventory, clean and check lifeboats, clean quarters, and sort and check laundry.

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- Administrative clerks oversee the manifests of cargo shipments, timekeeping, billing and schedule updates of vessel arrivals and departures.

The sailors who man maritime transportation vessels have historically led rugged and interesting lives. Their careers took them to the ports of the world, while their work frequently tested their courage and strength. Most ocean-going vessels crew are divided into three departments.

The Deck Department

- Ordinary seaman are the entry level position of the deck department whose duties include cleaning, scrubbing, painting and generally keeping the ship clean. They assist the able seaman in the performance of their duties.
- Able seamen make up the majority of any ship's crew. They must have a thorough knowledge of all parts of the ship and how to use all gear and deck equipment. On some ships, they serve as helmsmen, steering the ship under the direction of a ship's officer.
- The ship's boatswain serves as the highest ranking seaman in the deck department. They serve as foreman of the deck crew, who assigns work and supervises general maintenance operations.
- The third mate is generally the entry level position for a ship's officer. The third mate normally serves as signal officer, supervising the loading and unloading of ships cargo.
- The second mate by tradition serves as the navigation officer. They check instruments, maintain navigational equipment and ensure appropriate, up-to-date charts are available.
- The first mate / chief mate / chief deck officer serve as the captain's assistant. They assign duties to the deck crew and manage personnel.
- The captain or master is in command of a vessel. The captain has complete responsibility for the ship's operation and the safety of the crew, passengers and cargo.

The Engine Department

- The chief engineer supervises the engine department and its personnel and has the responsibility for the safe and efficient operation of the engines and mechanical equipment.
- The first assistant engineer supervises the engine room personnel.
- The second assistant engineer maintains the boiler and any related equipment.
- The third assistant engineer supervises the lubrication of the engine room equipment and distillation of saltwater to freshwater.

The Steward's Department

- Messmates are the lowest rating within the steward's department. They set tables, serve meals and clean the mess rooms.
- On larger ships, the assistant cook prepares the food for cooking under the supervision of the chief cook.
- The chief cook directs the preparation and serving of all meals.
- The chief steward is responsible for the supervision of the steward's department. Ordering supplies, planning menus, and supervising meals are some of their duties.

SHIPBUILDING

Shipbuilding has long been a proud part of Canadian history. From the shipyards of Lunenburg, N.S., where some of the finest sailing ships were constructed from timber to the Saint John, N.B. shipyards where several Canadian Patrol Frigates were welded from steel shipbuilding, careers can be found. Shipbuilding careers fall into three categories.

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Naval Architecture

- Naval architects prepare designs, specifications and working plans for commercial mechant vessels, naval ships, docks, oil-drilling rigs and marine facilities often in cooperation with civil engineers.
- They make cost estimates and supervise the construction of the ship.
- They advise on problems occurring during building or repair.

Marine Engineers

- Marine engineers work closely with naval architects in a design team; however the field of marine engineering is broader.
- Marine engineers work on ships, oil rigs, dock construction and may also be responsible for maintaining all the machinery on a ship as the engineering officer.

Skilled Trades People

Many skilled trades people are required during the construction phase of shipbuilding. They may include:

- metalworkers,
- crane operators,
- shipfitters,
- machinists,
- electricians,
- carpenters,
- boilermakers,
- sheet-metal workers,
- painters, and
- plumbers.

CONCLUSION

As you decide on your future educational and career plans, many opportunities are available to you. If you decide to pursue a maritime education or career, you now have the knowledge to help make a decision on what path you wish to take.

If your career path does not lead to one within the marine environment, the knowledge gained here enhances your understanding of the varied and important jobs related to the maritime fields.



Congratulations, you have completed your self study package on EO C520.01 (Examine Canadian Naval and Maritime Educational and Career Opportunities). Complete the following exercise and hand your completed package to the Training Officer / Course Officer who will record your completion in your Phase Five logbook.

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FINAL EXERCISE

Cadet's Name: _____ Date: _____

1. Describe the Regular Officer Training Program (ROTP).

2. Where is the Canadian Coast Guard College located?

3. List five trades offered by the Canadian Navy that are also careers found in private sector marine transportation.

4. Describe the duties of a CCG navigation officer.

5. Describe the purpose of the Fisheries Management section of DFO.

6. List six subtypes of oceanography.

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ACTIVATE YOUR BRAIN ANSWER KEY



***Activate Your Brain #1*:**

Name two entry plans for the CF. Explain how they differ.

ROTP, CEOTP, or NCM-SEP. The ROTP and CEOTP are officer entry plans while NCM-SEP is for NCM trades. ROTP candidates receive a full subsidized education, while CEOTP candidates receive subsidization to complete their already obtained partial degree.



***Activate Your Brain #2*:**

Name three programs offered at the CCGC. How long does each program take to complete?

The OTP is four years in duration. The MCTS program is 25 weeks in duration. The MELDEV program is three years in duration.



***Activate Your Brain #3*:**

List some marine certifications that can be obtained through attending a civilian educational institute.

Diplomas of Technology in Marine Engineering, Marine Engineering Systems Design, Marine Environmental, Nautical Science and Naval Architecture.

Joint Diploma of Technology / Bachelor of Technology in Ocean Instrumentation.

Technician Diplomas in Remotely Operated Vehicles (ROV), Marine Engineering and Transportation Logistics.

Technical Certificates in Offshore Steel Fabrication, Bridge Watch, Fire Rescue, Marine Diesel Mechanic, Fish Harvesting, Navigation and Professional Diving, Bridge Watchman, Chief Mate, Watchkeeping Mate Near Coastal (WKMNC), Master 150 Gross Tonnage (GT) Domestic, Master 500 GT Domestic, Master 3000 GT Domestic, Marine Engineer Fourth Class, Marine Engineer Third Class, Marine Engineer Second Class and Marine Engineer First Class.

Advanced Diplomas in Integrated Coastal and Ocean Management, Sustainable Aquaculture and Water Quality.

Degrees of Bachelor of Maritime Studies, Bachelor of Technology, Master of Marine Studies (Fisheries Resource Management).

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***Activate Your Brain #4*:**

List three officer trades and three NCM trades that are available as a career option in the Canadian Navy.

MARS officer, MS ENG officer and NCS ENG officer.

BOSN, H TECH, MAR EL, MAR ENG MECH, NCI OP, NAV COMM, NES OP, NE TECH (C), NE TECH (R), NE TECH (S), NW TECH, SONAR OP, STWD.



***Activate Your Brain #5*:**

List three ships' officer and three ships' crew positions that are available as a career option in the CCG.

navigation officer, engineering officer, electrical officer, logistics officer.

deckhand, twinehand, engine room rating / technician, steward, cook.



***Activate Your Brain #6*:**

Describe the purpose of the fish habitat management section of DFO.

The fish habitat management section of DFO works to protect and conserve fish habitat in support of Canada's coastal and inland fisheries resources. They conduct environmental assessments before DFO makes any regulatory changes to fish habitat provisions of the Fisheries Act. They promote environmental stewardship and fish habitat protection through public education and school programs.

FINAL EXERCISE ANSWER KEY

1. Describe the Regular Officer Training Program (ROTP).

The Regular Officer Training Program (ROTP) is an entry program to the CF. A person enrolling in ROTP would be provided an undergraduate education free of charge and be responsible for four years service to the CF when their education is complete. Undergraduate degrees are completed at the Royal Military College of Canada (RMC), however in some instances the degree can be completed at a civilian university. RMC offers many of the same undergraduate degree programs that are available at most Canadian universities.

2. Where is the Canadian Coast Guard College located?

Sydney, N.S.

3. List five trades offered by the Canadian Navy that are also careers found in private sector marine transportation.

MARS officer, MS ENG officer, BOSN, STWD, MAR EL or MAR ENG MECH.

4. Describe the duties of a CCG navigation officer.

Navigation officers, under the authority of the CO, coordinate the vessel’s operations. They must understand safe navigation procedures as well as an understanding of the functions of the ship’s navigation equipment. Navigation officers are responsible for the safety of the ship, its crew and any other persons on board the vessel.

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The navigation officer also directly supervises and coordinates the activities of crew working on the bridge. The CO (the highest level of navigation officer) is in overall charge and has the responsibility for the entire vessel.

5. Describe the purpose of the Fisheries Management section of DFO.

The Fisheries Management section of DFO works to provide Canadians with a sustainable fishery resource that provides for an economically viable and diverse industry. Protection and conservation of fisheries resources are key components of fisheries management. There are three main types of fisheries in Canada which include Aboriginal, commercial and recreational. Fisheries Management include policies that protect our resources from both domestic and foreign overfishing.

6. List six subtypes of oceanography.

Atmospheric oceanography, biological oceanography, chemical oceanography, geological oceanography, physical oceanography and oceanographic engineering.

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