National Occupational Analysis

Oil Heat System Technician

2015

Trades and Apprenticeship Division	Division des métiers et de l'apprentissage
Labour Market Integration Directorate	Direction de l'intégration au marché du travail
National Occupational Classification:	7331
Disponible en français sous le titre :	Technicien/technicienne de système de chauffage à mazout

You can download this publication by going online: publicentre.esdc.gc.ca. This document is available on demand in multiple formats by contacting 1 800 O-Canada (1-800-622-6232), teletypewriter (TTY), 1-800-926-9105.

PDF
Cat. No.: Em15-1/22-2015E-PDF
ISBN: 978-0-660-03748-6

ESDC
Cat. No. : LM-447-11-15E

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The Canadian Council of Directors of Apprenticeship (CCDA) recognizes this National Occupational Analysis (NOA) as the national standard for the occupation of Oil Heat System Technician.

Background

The first National Conference on Apprenticeship in Trades and Industries, held in Ottawa in 1952, recommended that the federal government be requested to cooperate with provincial and territorial apprenticeship committees and officials in preparing analyses of a number of skilled occupations. To this end, Employment and Social Development Canada (ESDC) sponsors a program, under the guidance of the CCDA, to develop a series of NOAs.

The NOAs have the following objectives:

- to describe and group the tasks performed by skilled workers;
- to identify which tasks are performed in every province and territory;
- to develop instruments for use in the preparation of Interprovincial Red Seal Examinations and curricula for training leading to the certification of skilled workers;
- to facilitate the mobility of apprentices and skilled workers in Canada; and,
- to supply employers, employees, associations, industries, training institutions and governments with analyses of occupations.

ACKNOWLEDGEMENTS

The CCDA and ESDC wish to express sincere appreciation for the contribution of the many tradespersons, industrial establishments, professional associations, labour organizations, provincial and territorial government departments and agencies, and all others who contributed to this publication.

Special acknowledgement is extended to the following representatives from the trade who attended a national workshop to develop the previous edition of this NOA in 2006.

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This 2015 edition of the NOA was reviewed, updated and validated by industry representatives from the provinces and territories, and the Canadian Oil Heat Association (COHA) to ensure that it continues to represent the skills and knowledge required in this trade. The coordinating, facilitating and processing of this analysis were undertaken by employees of the NOA development team of the Trades and Apprenticeship Division of ESDC. The host jurisdiction of Newfoundland and Labrador also participated in the development of this NOA.

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STRUCTURE OF ANALYSIS

To facilitate understanding of the occupation, the work performed by tradespersons is divided into the following categories:

Blocks	largest division within the analysis that is comprised of a distinct set of trade activities
Tasks	distinct actions that describe the activities within a block
Sub-Tasks	distinct actions that describe the activities within a task
Supporting Knowledge and Abilities	skills and knowledge that an individual must have to perform a sub-task

The analysis also provides the following information:

Trends	changes identified that impact or will impact the trade including work practices, technological advances, and new materials and equipment
Related Components	list of products, items, materials and other elements relevant to the block
Tools and Equipment	categories of tools and equipment used to perform all tasks in the block; these tools and equipment are listed in Appendix A
Context	information to clarify the intent and meaning of tasks

The appendices located at the end of the analysis are described as follows:

Appendix A — Tools and Equipment	non-exhaustive list of tools and equipment used in this trade
Appendix B — Glossary	definitions or explanations of selected technical terms used in the analysis
Appendix C — Acronyms	list of acronyms used in the analysis with their full name
Appendix D — Block and Task Weighting	block and task percentages submitted by each jurisdiction, and the national averages of these percentages; these national averages determine the number of questions for each block and task in the Interprovincial exam
Appendix E — Pie Chart	graph which depicts the national percentages of exam questions assigned to blocks
Appendix F — Task Profile Chart	chart which outlines graphically the blocks, tasks and sub-tasks of this analysis

Development of Analysis

A draft analysis is developed by a committee of industry experts in the field led by a team of facilitators from Employment and Social Development Canada. This draft analysis breaks down all the tasks performed in the occupation and describes the knowledge and abilities required for a tradesperson to demonstrate competence in the trade.

Draft Review

The NOA development team then forwards a copy of the analysis and its translation to provincial and territorial authorities for a review of its content and structure. Their recommendations are assessed and incorporated into the analysis.

Validation and Weighting

The analysis is sent to all provinces and territories for validation and weighting. Participating jurisdictions consult with industry to validate and weight the document, examining the blocks, tasks and sub-tasks of the analysis as follows:

BLOCKS	Each jurisdiction assigns a percentage of questions to each block for an examination that would cover the entire trade.
TASKS	Each jurisdiction assigns a percentage of exam questions to each task within a block.
SUB-TASKS	Each jurisdiction indicates, with a YES or NO, whether or not each sub-task is performed by skilled workers within the occupation in its jurisdiction.

The results of this exercise are submitted to the NOA development team who then analyzes the data and incorporates it into the document. The NOA provides the individual jurisdictional validation results as well as the national averages of all responses. The national averages for block and task weighting guide the Interprovincial Red Seal Examination plan for the trade.

This method for the validation of the NOA also identifies common core sub-tasks across Canada for the occupation. If at least 70% of the responding jurisdictions perform a sub-task, it shall be considered common core. Interprovincial Red Seal Examinations are based on the common core sub-tasks identified through this validation process.

Definitions for Validation and Weighting

YES	sub-task performed by qualified workers in the occupation in a specific jurisdiction
NO	sub-task not performed by qualified workers in the occupation in a specific jurisdiction
NV	analysis Not Validated by a province/territory
ND	trade Not Designated in a province/territory
NOT COMMON CORE (NCC)	sub-task, task or block performed by less than 70% of responding jurisdictions; these will not be tested by the Interprovincial Red Seal Examination for the trade
NATIONAL AVERAGE %	average percentage of questions assigned to each block and task in Interprovincial Red Seal Examination for the trade

Provincial/Territorial Abbreviations

NL	Newfoundland and Labrador
NS	Nova Scotia
PE	Prince Edward Island
NB	New Brunswick
QC	Quebec
ON	Ontario
MB	Manitoba
SK	Saskatchewan
AB	Alberta
BC	British Columbia
NT	Northwest Territories
YT	Yukon Territory
NU	Nunavut

ANALYSIS

Safe working procedures and conditions, accident prevention, and the preservation of health are of primary importance to industry in Canada. These responsibilities are shared and require the joint efforts of government, employers and employees. It is imperative that all parties become aware of circumstances that may lead to injury or harm. Safe learning experiences and work environments can be created by controlling the variables and behaviours that may contribute to accidents or injury.

It is generally recognized that safety-conscious attitudes and work practices contribute to a healthy, safe and accident-free work environment.

It is imperative to apply and be familiar with the Occupational Health and Safety (OH&S) Acts and Workplace Hazardous Materials Information System (WHMIS) regulations. As well, it is essential to determine workplace hazards and take measures to protect oneself, co-workers, the public and the environment. Additional training around safety issues such as working in confined spaces is highly recommended.

Safety education is an integral part of training in all jurisdictions. As safety is an imperative part of all trades, it is assumed and therefore it is not included as a qualifier of any activities. However, the technical safety tasks and sub-tasks specific to the trade are included in this analysis.

SCOPE OF THE OIL HEAT SYSTEM TECHNICIAN

"Oil Heat System Technician" is this trade's official Red Seal occupational title approved by the CCDA. This analysis covers tasks performed by oil heat system technicians whose occupational title has been identified by some provinces and territories of Canada under the following names:

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
Oil Burner Mechanic				✓						✓		✓	
Oil Burner Mechanic (Residential)													✓
Oil Heat System Technician			✓										
Oil Heat Systems Technician	✓	✓									✓		

Oil heat system technicians install, repair and maintain all types of oil-fired domestic and commercial appliances, equipment, components and systems. On new installations, they may design, assemble and install the heating and ventilation systems, install oil burner components such as control devices and associated wiring, install fuel supply systems and connect the plumbing to mechanical and electrical systems. They may also install, maintain and repair wood/oil heating systems.

Oil heat system technicians work in the residential, commercial and industrial sectors. They may be self-employed or employed by heating, ventilation and air conditioning (HVAC) installation and service companies.

Service calls and emergency calls may take place anytime: days, evenings or weekends. Full time and seasonal employment opportunities are available.

Oil heat system technicians must have good mechanical aptitude, problem solving skills and good customer relations skills. A good understanding of basic electrical/electronic theory and The House as a System is also required. They may give cost estimates for required work and explain the operation and maintenance of appliances and systems.

This analysis recognizes similarities or overlaps with the work of refrigeration and air conditioning mechanics, gasfitters, plumbers and sheet metal workers.

Experienced oil heat system technicians may advance into supervisory and management positions or move into self-employment.

OCCUPATIONAL OBSERVATIONS

Oil heat system technicians must continually upgrade their skills to become proficient with new products and equipment introduced into the industry. Testing efficiencies are more easily realized with the introduction of computerized sensors, electronic and digital controls.

Technological changes and stringent new regulations have forced oil heat system technicians to upgrade their skills and constantly apprise themselves regarding environmental legislation. The increasingly complex and stringent environmental laws, especially regarding oil storage units, are having a major impact on the occupation. The mechanic must recognize potential hazards and react to dangerous situations. The skill of containment is becoming more critical and environmental incident reporting procedures are evolving areas for the mechanic.

Customers continue to ask the oil heat system technician for more input and advice on choosing a highly efficient and cost effective system.

A move to alternative fuel sources continues to make a major impact on the oil heat system technician trade. The mechanic must access specialized training in order to become proficient in the delivery, storage, distribution and combustion of such fuels with specific emphasis on safe handling and system operation.

ROLES AND OPPORTUNITIES FOR SKILLED TRADES IN A SUSTAINABLE FUTURE

Climate change affects all of us. Trades play a large role in implementing solutions and adjusting to changes in the world.

Throughout this standard, there may be specific references to tasks, skills and knowledge that clearly show this trade's role in a more sustainable future. Each trade has different roles to play and contributions to make in their own way.

For example:

- Construction tradespeople need to consider the materials they are using, building methods, and improvements to mechanical and electrical installations. There are important changes to codes and standards to help meet the climate change goals and commitments set for 2030 and 2050. Retrofits and new construction of low-energy buildings provide enormous opportunities for workers in this sector. Concepts, such as energy efficiency and regarding buildings as systems are foundational.

- Automotive and mechanical trades are seeing a shift towards the electrification of vehicles and equipment. As a result, new skills and knowledge will be required for tradespeople working in this sector. There are mandates for sales of new light-duty zero-emission vehicles (ZEV) in Canada, with the goal of achieving 100% ZEV sales by 2035. Due to this mandate, the demand for these vehicles is growing quickly among consumers and fleets. With this escalating demand, the need for skilled workers to maintain and repair these vehicles is also increasing.

- In industrial and resource sectors, there is pressure to move towards increased electrification of industrial processes. Many industrial and commercial facilities are also being upgraded to improve energy efficiency in areas such as lighting systems, and new production processes and technologies. There are also opportunities in carbon capture, utilization and storage (CCUS), as well as the production and export of low-carbon hydrogen.

- Trades in the service sector may also need to be aware of responsible sourcing, as well as efficient use of products and materials. New ways of working better are always a part of the job.

There are fast-moving changes in guidelines, codes, regulations and specifications. Many are being implemented for the purpose of energy efficiency and climate change. Those that affect specific trades may be mentioned within the standard. Examples of these guidelines and legislation include:

- The National Energy Code of Canada for Buildings (NECB).
- The Canadian Net-Zero Emissions Accountability Act (CNZEAA).
- programs that encourage sustainable building design and construction such as Leadership in Energy and Environmental Design (LEED) and the Zero Carbon Building (ZCB) standards.
- the Montreal Protocol for phasing out R22 refrigerants.
- energy efficiency programs such as ENERGY STAR.
- principles of the United Nations Declaration for the Rights of Indigenous Peoples pertaining to energy sector development.

Apprentices and tradespeople need to increase their climate literacy and reinforce their own understanding of energy issues and environmental practices. It is important for them to understand why these changes are happening and their effect on trades' work. While individual tradespeople and apprentices may not be able to choose certain elements like; the architectural design of buildings, building material selection, regulatory requirements, use of electric vehicles and technologies, they must understand the impact of using these elements in their work. Impacts include using environmentally friendly products and following requirements related to the disposal and recycling of materials.

In apprenticeship, as well as in ongoing professional development, employers and instructors should encourage learning about these concepts, why they are important, how they are implemented, and the overarching targets they are aiming to achieve.

All in all, it's about doing the work better and building a better world.

Trends

There is an increase in the use of portable battery-powered tools. Electronic testing equipment is evolving to deliver more accurate and more detailed information. Tools are becoming more ergonomic and user-friendly. There is an increase in the regulations governing personal protective equipment (PPE) and Transportation of Dangerous Goods (TDG). The use of computers is increasing for information sharing such as billing, training and dispatching. There is an increase in the use of telecommunication equipment such as cell phones and electronic messaging devices. Awareness of working in confined spaces and related training is increasingly recommended.

Related Components

All components apply.

Tools and Equipment

See Appendix A.

Task 1 Uses tools and equipment.

Context

The use of tools and equipment is important to oil heat system technicians in order to properly perform their tasks. Using proper tools increases efficiency, productivity and quality of work.

Sub-task

A-1.01 Uses hand tools.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

A-1.01.01 knowledge of types of hand tools

A-1.01.02 knowledge of hand tool operating procedures

A-1.01.03 knowledge of limitations of use of hand tools

A-1.01.04 ability to organize hand tools

A-1.01.05 ability to select hand tools

A-1.01.06 ability to maintain hand tools

A-1.01.07 ability to store hand tools

A-1.01.08 ability to recognize worn, damaged or defective hand tools

A-1.01.09 ability to apply hand-eye coordination

Sub-task

A-1.02 Uses power tools.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

A-1.02.01 knowledge of types of power tools

A-1.02.02 knowledge of power tool operating procedures

A-1.02.03 knowledge of limitations of use of power tools

A-1.02.04 ability to organize power tools

A-1.02.05 ability to select power tools

A-1.02.06 ability to maintain power tools

A-1.02.07 ability to store power tools

A-1.02.08 ability to recognize worn, damaged or defective power tools

A-1.02.09 ability to apply hand-eye coordination

Sub-task

A-1.03 Uses powder-actuated tools. (NOT COMMON CORE)

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
no	yes	yes	no	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

A-1.03.01 knowledge of types of powder-actuated tools

A-1.03.02 knowledge of types of shots

A-1.03.03 knowledge of certification requirements

A-1.03.04 knowledge of powder-actuated tool operating procedures

A-1.03.05 knowledge of limitations of use of powder-actuated tools

A-1.03.06 ability to select powder-actuated tools

A-1.03.07 ability to maintain powder-actuated tools

A-1.03.08 ability to store powder-actuated tools

A-1.03.09 ability to recognize worn, damaged or defective powder-actuated tools

A-1.03.10 ability to apply hand-eye coordination

Sub-task

A-1.04 Uses measuring and testing equipment.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

A-1.04.01 knowledge of types of measuring and testing equipment

A-1.04.02 knowledge of measuring and testing equipment operating procedures

A-1.04.03 ability to perform basic calculations

A-1.04.04 ability to convert between imperial and metric measurements

A-1.04.05 ability to interpret measurements

A-1.04.06 ability to organize measuring and testing equipment

A-1.04.07 ability to select measuring and testing equipment

A-1.04.08 ability to verify calibration of measuring and testing equipment

A-1.04.09 ability to maintain measuring and testing equipment

A-1.04.10 ability to store measuring and testing equipment

Sub-task

A-1.05 Uses hoisting, lifting and rigging equipment.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

A-1.05.01 knowledge of types of hoisting, lifting and rigging equipment, and certification requirements

A-1.05.02 knowledge of operating procedures

A-1.05.03 knowledge of applications of hoisting, lifting and rigging equipment

A-1.05.04 knowledge of limitations of hoisting, lifting and rigging equipment

A-1.05.05 ability to recognize safe lifting locations or points

A-1.05.06 ability to maintain hoisting, lifting and rigging equipment

A-1.05.07 ability to recognize worn, damaged or defective hoisting, lifting and rigging equipment

A-1.05.08 ability to store hoisting, lifting and rigging equipment

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Sub-task

A-1.06 Uses ladders and platforms.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

A-1.06.01 knowledge of types of ladders such as step ladders and extension ladders

A-1.06.02 knowledge of types of platforms such as scaffolds, hydraulic lifts and scissor lifts

A-1.06.03 knowledge of government regulations

A-1.06.04 knowledge of operating procedures

A-1.06.05 knowledge of limitations of ladders and platforms

A-1.06.06 ability to secure ladders and platforms

A-1.06.07 ability to maintain ladders and platforms

A-1.06.08 ability to recognize worn, damaged or defective ladders and platforms

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Sub-task

A-1.07 Uses soldering, flaring and threading tools.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

A-1.07.01 knowledge of WHMIS

A-1.07.02 knowledge of types of soldering, flaring and threading equipment

A-1.07.03 knowledge of alloys and fluxes

A-1.07.04 knowledge of TDG regulations and certification requirements

A-1.07.05 knowledge of ventilation requirements

A-1.07.06	ability to recognize flammable materials
A-1.07.07	ability to match alloy to specific component to be soldered, flared and threaded
A-1.07.08	ability to select soldering, flaring and threading equipment
A-1.07.09	ability to organize soldering, flaring and threading equipment
A-1.07.10	ability to maintain soldering, flaring and threading equipment
A-1.07.11	ability to store soldering, flaring and threading equipment

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Sub-task

A-1.08 Uses personal protective equipment (PPE) and safety equipment.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

A-1.08.01	knowledge of types of PPE
A-1.08.02	knowledge of types of safety equipment
A-1.08.03	knowledge of PPE and safety equipment operations
A-1.08.04	knowledge of training requirements for PPE and safety equipment
A-1.08.05	knowledge of location of PPE and safety equipment
A-1.08.06	knowledge of workplace safety and health regulations
A-1.08.07	ability to select PPE and safety equipment
A-1.08.08	ability to maintain PPE and safety equipment
A-1.08.09	ability to store PPE and safety equipment
A-1.08.10	ability to recognize worn, damaged or defective PPE and safety equipment

Task 2 Organizes work.

Context Organizing work ensures quality, efficient and safe performance of oil heat system technicians' duties and accountability for their work.

Sub-task

A-2.01 Communicates with others.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

A-2.01.01	knowledge of customer expectations
A-2.01.02	knowledge of communication equipment and technology
A-2.01.03	ability to interact with customers
A-2.01.04	ability to communicate with industry professionals
A-2.01.05	ability to communicate with other tradespeople
A-2.01.06	ability to communicate with apprentices
A-2.01.07	ability to communicate with supervisors and management
A-2.01.08	ability to use communication equipment

Sub-task

A-2.02 Maintains clean and safe work environment.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

A-2.02.01	knowledge of safety regulations
A-2.02.02	knowledge of company safety policies
A-2.02.03	knowledge of environmental guidelines and regulations
A-2.02.04	ability to recognize and correct unsafe conditions
A-2.02.05	ability to keep workplace tidy and organized

Sub-task

A-2.03 Interprets codes and documentation.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

A-2.03.01	knowledge of B139 code
A-2.03.02	knowledge of relevant sections of codes such as building, plumbing, electrical and safety codes
A-2.03.03	knowledge of types of documentation such as permits, warranties and invoices
A-2.03.04	knowledge of trade terminology present in codes and documentation
A-2.03.05	ability to locate specific information in codes and documentation

Sub-task

A-2.04 Completes documentation.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

A-2.04.01	knowledge of types of business documentation such as work orders, purchase orders, service invoices and warranties
A-2.04.02	knowledge of types of government forms such as permits, inspection reports and environmental forms
A-2.04.03	ability to prepare quote
A-2.04.04	ability to prepare material list
A-2.04.05	ability to complete final inspection report
A-2.04.06	ability to use documentation equipment such as computers, digital cameras and video cameras

Sub-task

A-2.05 Interprets drawings.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

A-2.05.01	knowledge of types of drawings such as blueprints, shop drawings and sketches
A-2.05.02	knowledge of drawing components such as lines, symbols, legends and schedules
A-2.05.03	knowledge of specifications
A-2.05.04	ability to use drawing instruments
A-2.05.05	ability to locate layout dimensions
A-2.05.06	ability to reference specifications
A-2.05.07	ability to scale imperial and metric measurements

Sub-task

A-2.06 Performs basic distribution layout.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

A-2.06.01	knowledge of building size and application
A-2.06.02	knowledge of types of appliances and components
A-2.06.03	knowledge of forced air distribution systems
A-2.06.04	knowledge of types of hydronic distribution systems such as radiant floor, fin tube and cast iron
A-2.06.05	knowledge of pipe and duct sizes, types and flow rates
A-2.06.06	ability to evaluate requirements
A-2.06.07	ability to take worksite measurements
A-2.06.08	ability to calculate heat loss and heat gain
A-2.06.09	ability to determine location of piping and ducting

Sub-task

A-2.07 Organizes material and components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

A-2.07.01	knowledge of types of material
A-2.07.02	knowledge of types of components
A-2.07.03	ability to select material and components
A-2.07.04	ability to prepare material and components
A-2.07.05	ability to order material and components
A-2.07.06	ability to take worksite measurements
A-2.07.07	ability to clean pipes and fittings

Sub-task

A-2.08 Commissions appliances and components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

A-2.08.01	knowledge of appliance and component operations
A-2.08.02	knowledge of relevant sections of codes such as building, plumbing, electrical and safety codes
A-2.08.03	ability to verify appliance operation
A-2.08.04	ability to verify system operation
A-2.08.05	ability to perform system analysis
A-2.08.06	ability to perform visual inspections

Trends

There is an increased enforcement of codes. Fuel storage tanks are now made of a variety of materials including heavier gauge metals, fibreglass, high density plastic and steel. There is an increased use of non-metallic fuel storage tanks, expansive coil (expansion loop), protected fuel lines and guards for weather protection of components. Reinforced slabs are more common for tank bases.

Related Components (including, but not limited to)

Fuel storage tanks, fuel lines, pumps, valves, gauges, vent alarms, fittings, pipes, guards, filters, tank stands, caps, supports, tank bases.

Tools and Equipment

See Appendix A.

Task 3 Installs fuel storage tanks.

Context

Stringent new jurisdictional regulations have mandated that oil heat system technicians install fuel storage tanks in strict adherence to standards to prevent environmental mishaps. New guards and improved connections ensure that leaks are minimized and the storage of fuel oil is more secure and less subjected to accidents and system defects.

Sub-task

B-3.01 Selects fuel storage tanks.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

B-3.01.01 knowledge of tank composition such as fibreglass, plastic and steel

B-3.01.02 knowledge of tank design

B-3.01.03 knowledge of building size and geographic location

B-3.01.04 knowledge of accessibility of tank location

B-3.01.05 ability to determine tank for specific location

B-3.01.06 ability to select stand

Sub-task

B-3.02 Determines fuel storage tank location.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

B-3.02.01 knowledge of location of utilities such as water source and electrical supply

B-3.02.02 knowledge of local regulations

B-3.02.03 knowledge of building orientation and property lines

B-3.02.04 knowledge of location of building openings such as air supply, windows and doors

B-3.02.05 knowledge of tank capacity and design

B-3.02.06 knowledge of customer preferences

B-3.02.07 ability to take worksite measurements

Sub-task

B-3.03 Prepares location for fuel storage tanks.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

B-3.03.01 knowledge of tank weight at total capacity

B-3.03.02 knowledge of location of heating appliance

B-3.03.03 knowledge of types of tank base material such as poured concrete or reinforced pads

B-3.03.04 ability to prepare base such as removing soil and compacting base

B-3.03.05 ability to calculate maximum weight load

B-3.03.06 ability to level tank base

B-3.03.07 ability to pour concrete pad

B-3.03.08 ability to assess for possibility of soil erosion

Sub-task

B-3.04 Positions fuel storage tanks.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

B-3.04.01 knowledge of tank incline required for tank design such as end and bottom outlet

B-3.04.02 knowledge of environmental conditions

B-3.04.03 ability to secure tank legs

B-3.04.04 ability to secure tank to base with fasteners

Sub-task

B-3.05 Installs fuel storage tank components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

B-3.05.01 knowledge of types and locations of components such as gauges, tank valves and vent alarms

B-3.05.02 knowledge of protection for components

B-3.05.03 ability to seal components using approved sealants

B-3.05.04 ability to tighten components

B-3.05.05 ability to retrofit components

B-3.05.06 ability to test and inspect for fuel leaks

Sub-task

B-3.06 Installs fill and vent pipes.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

B-3.06.01 knowledge of sizes and types of fill and vent pipes

B-3.06.02 knowledge of pipe fittings such as caps, elbows and unions

B-3.06.03 ability to use fasteners and supports

B-3.06.04 ability to cut and seal holes in building envelope

B-3.06.05 ability to prepare pipe by threading and applying sealing compound

B-3.06.06 ability to seal components using approved sealants

B-3.06.07 ability to torque pipe and fittings

B-3.06.08 ability to test and inspect for fuel leaks

Task 4 Installs fuel supply system.

Context Environmental impact regulations throughout Canada have required that oil heat system technicians improve skills in the installation of relevant fuel supply components. Improved and more durable components allow for movement of integral parts without breakage or oxidation.

Sub-task

B-4.01 Selects fuel supply components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

B-4.01.01 knowledge of components such as oil filters, valves, pumps and oil lines

B-4.01.02 knowledge of types of valves such as oil-safety, in-line, anti-siphon and check

B-4.01.03 knowledge of manufacturers' specifications

B-4.01.04 ability to determine size of fuel lines and oil filters

B-4.01.05 ability to determine when to use booster pump systems

B-4.01.06 ability to determine when to use two-line systems

B-4.01.07 ability to determine when to use specialized components

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Sub-task

B-4.02 Installs fuel supply components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

B-4.02.01 knowledge of sealants

B-4.02.02 ability to determine location of components such as valves, booster pumps and de-aerators

B-4.02.03 ability to determine travel path of fuel line

B-4.02.04 ability to fasten and support pipe

B-4.02.05 ability to seal components using approved sealants

B-4.02.06 ability to test and inspect for fuel leaks

Trends

Consumers are increasingly demanding a more comfortable and cost-effective heating system. The industry is answering with high efficiency appliances and heating system designs such as radiant floor heating, integrated combination systems and energy management systems (EMS).

Related Components

Appliances: boilers, water heaters, wood/oil combination appliances, forced air furnaces, condensing furnaces, incinerators, oil stoves, space heaters, combo systems (water/air heating).

Components: Indirect water heaters, condensate pumps, circulating pumps, manifolds, valves (zone, pressure reducing, check, flow, pressure relief, back flow preventing, low water cut-off), relays, expansion tanks, auto vents, air scoops, limit controls, smoke pipe, ducting, plenums, dampers, thermostats, draft controls, draft inducers, registers, grilles, piping, tubing, humidifiers, dehumidifiers, air cleaning devices, heat recovery ventilators.

Tools and Equipment

Hand tools, power tools, powder-actuated tools, measuring and testing equipment, hoisting, lifting and rigging equipment, soldering, flaring and threading equipment, PPE and safety equipment.

Task 5 — Installs and retrofits oil-fired and wood/oil appliances and components.

Context The appliance provides the heat for all heating systems. Oil heat system technicians must assemble and position the appliance and complete all connections to fuel and electrical supply and to venting and distribution systems.

Sub-task

C-5.01 Selects appliances.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

C-5.01.01	knowledge of relevant sections of codes such as building, plumbing, electrical and safety codes
C-5.01.02	knowledge of system requirements
C-5.01.03	knowledge of local regulations
C-5.01.04	knowledge of types of appliances such as front and rear breech, and multi-position
C-5.01.05	knowledge of manufacturers' specifications
C-5.01.06	knowledge of customer needs
C-5.01.07	knowledge of desired appliance location
C-5.01.08	knowledge of types of hydronic heating appliances
C-5.01.09	knowledge of location of other appliances such as clothes dryer, heat recovery ventilator and water heater

Sub-task

C-5.02 Positions appliance.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

C-5.02.01	knowledge of relevant sections of codes such as building, plumbing, electrical and safety codes
C-5.02.02	knowledge of local regulations
C-5.02.03	knowledge of types of appliances such as front and rear breech, and multi-position
C-5.02.04	knowledge of manufacturers' specifications
C-5.02.05	knowledge of desired appliance location
C-5.02.06	knowledge of types of hydronic heating appliances
C-5.02.07	knowledge of location of other appliances such as clothes dryer, heat recovery ventilator and water heater
C-5.02.08	knowledge of types of fasteners
C-5.02.09	ability to level appliance
C-5.02.10	ability to mount appliance
C-5.02.11	ability to secure appliance using fasteners

Sub-task

C-5.03 Installs components on appliance.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

C-5.03.01	knowledge of appliance components such as burners, appliance jackets and controls
C-5.03.02	knowledge of sequence of assembly
C-5.03.03	knowledge of location of controls
C-5.03.04	ability to apply sealing compounds

C-5.03.05 ability to attach fittings and adapters

C-5.03.06 ability to connect water supply to the appliance

C-5.03.07 ability to assemble and mount burners

Sub-task

C-5.04 Connects fuel supply to appliance.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

C-5.04.01 knowledge of types of fuel lines such as steel, flexible and coated copper

C-5.04.02 knowledge of types of adapters and fittings

C-5.04.03 knowledge of relevant sections of codes such as building, plumbing, electrical and safety codes

C-5.04.04 ability to apply sealing compounds

C-5.04.05 ability to flare fuel line

C-5.04.06 ability to support fuel line

C-5.04.07 ability to protect fuel line

C-5.04.08 ability to determine termination point

Sub-task

C-5.05 Connects electrical supply to appliance.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	no	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

C-5.05.01 knowledge of relevant sections of electrical codes

C-5.05.02 knowledge of types of connectors and fasteners

C-5.05.03 ability to select wire for specific load requirements

C-5.05.04 ability to strip and fasten wire

C-5.05.05 ability to secure wire to building structure

C-5.05.06 ability to seal electrical connectors

Sub-task

C-5.06 Connects vent/exhaust piping to appliance.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

C-5.06.01	knowledge of vent/exhaust piping components
C-5.06.02	knowledge of types of fasteners
C-5.06.03	knowledge of sequence of application of sealants
C-5.06.04	knowledge of relevant sections of codes such as building, plumbing, electrical and safety codes
C-5.06.05	ability to cut and crimp piping
C-5.06.06	ability to fasten piping to appliance
C-5.06.07	ability to apply sealants on balanced flue and direct vent applications

Sub-task

C-5.07 Installs dump zones for wood/oil systems.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

C-5.07.01	knowledge of application of dump zones
C-5.07.02	knowledge of appropriate location of dump zones
C-5.07.03	ability to assemble dump zone components
C-5.07.04	ability to solder connections on hydronic systems
C-5.07.05	ability to fabricate emergency access panel on forced air heating system
C-5.07.06	ability to connect wiring to dump zones

Sub-task

C-5.08 Connects drain to appliance.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

C-5.08.01 knowledge of relevant sections of plumbing codes

C-5.08.02 knowledge of liquids to be drained

C-5.08.03 knowledge of termination point of drain

C-5.08.04 knowledge of drain pipe materials

C-5.08.05 ability to fasten drain pipe to appliance

C-5.08.06 ability to protect drain pipe

C-5.08.07 ability to apply sealant

Task 6 Installs forced-air heating systems.

Context Warm air is delivered to all points of the building through the ducts. Oil heat system technicians install the furnace, the distribution system and related components.

Sub-task

C-6.01 Assembles ductwork.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

C-6.01.01 knowledge of ductwork material

C-6.01.02 knowledge of components installed during assembly such as zone dampers and fire dampers

C-6.01.03 knowledge of sequence of assembly

C-6.01.04 knowledge of hangers and supports

C-6.01.05 ability to join ducting

C-6.01.06	ability to modify ductwork by using methods such as cutting, forming and flanging
C-6.01.07	ability to size supply and return ducts

Sub-task

C-6.02 Installs ductwork.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

C-6.02.01	knowledge of relevant sections of codes such as building, plumbing, electrical and safety codes
C-6.02.02	knowledge of types of sealants such as duct sealer, foil tape and vinyl duct tape
C-6.02.03	ability to connect plenums to appliance
C-6.02.04	ability to connect starting collars and takeoffs
C-6.02.05	ability to install hangers
C-6.02.06	ability to seal joints
C-6.02.07	ability to connect trunk lines and branch lines
C-6.02.08	ability to install dampers such as manual and motorized
C-6.02.09	ability to install finish components such as registers and return air grilles

Task 7 Installs hydronic heating systems.

Context Hydronic heating systems heat buildings through the circulation of liquids. Oil heat system technicians install the boilers, the distribution systems and related components.

Sub-task

C-7.01 Assembles boilers.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

C-7.01.01	knowledge of types of boilers such as horizontal and vertical tube, cast iron and sectional
C-7.01.02	knowledge of applications of boilers such as residential and commercial
C-7.01.03	knowledge of sequence of assembly
C-7.01.04	knowledge of boiler components
C-7.01.05	ability to join sections of boilers
C-7.01.06	ability to fasten jacket
C-7.01.07	ability to apply sealants
C-7.01.08	ability to install boiler components such as aquastat well, controls and boiler drain

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Sub-task

C-7.02 Installs hydronic distribution system.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

C-7.02.01	knowledge of types of distribution systems such as radiant floor, cast iron and fin tube convector
C-7.02.02	knowledge of piping and tubing materials
C-7.02.03	knowledge of piping and tubing size
C-7.02.04	knowledge of relevant plumbing codes

C-7.02.05	ability to prepare rough-in to accept distribution systems
C-7.02.06	ability to install fasteners and supports
C-7.02.07	ability to join and fit piping and fittings using methods such as crimping, soldering, threading and using compression fittings
C-7.02.08	ability to fasten piping and tubing

Sub-task

C-7.03 Installs indirect water heater.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

C-7.03.01	knowledge of types of indirect water heaters such as stainless steel and glass lined heaters
C-7.03.02	knowledge of relevant sections of plumbing and electrical codes
C-7.03.03	knowledge of water requirements of building occupants
C-7.03.04	ability to level heater
C-7.03.05	ability to wire heater
C-7.03.06	ability to connect heater to appliance
C-7.03.07	ability to install heater components such as circulating pump, check valves and temperature controls

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Sub-task

C-7.04 Installs oil-fired water heater.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

C-7.04.01	knowledge of water heater components such as venting, controls, drains, vacuum relief valves, pressure reducing valves and anti-scald valves
C-7.04.02	knowledge of water heater sizes
C-7.04.03	knowledge of types of burners
C-7.04.04	knowledge of flooring materials
C-7.04.05	knowledge of manufacturers' specifications and recommendations

C-7.04.06 ability to size burner

C-7.04.07 ability to install components such as burners

C-7.04.08 ability to connect appliance to fuel, electrical and water supply

C-7.04.09 ability to connect to distribution system

C-7.04.10 ability to level heater

Sub-task

C-7.05 Installs hydronic heating system components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

C-7.05.01 knowledge of hydronic heating system components such as expansion tanks, air scoops and backflow preventers

C-7.05.02 knowledge of types of valves

C-7.05.03 knowledge of low-water cut-offs

C-7.05.04 ability to locate and fasten components

C-7.05.05 ability to join components using methods such as crimping, expanding, soldering and threading

C-7.05.06 ability to seal components

C-7.05.07 ability to connect components to electrical supply

BLOCK D VENTING, COMBUSTION AND MAKE-UP AIR

Trends

Balanced flues are becoming more predominant. Equipment is becoming more efficient resulting in lower stack temperatures. Building envelopes are becoming tighter requiring a more in-depth knowledge of air supply and venting. Due to lower stack temperature and new building design and construction, new venting materials are entering the marketplace.

Related Components

Sealants, ductwork and piping, insulation, fasteners, liners, chimney (pre-fab), direct vents, bricks, grilles, hoods, caps, dampers, fans, controls, wiring, construction material, heater (pre-heat).

Tools and Equipment

Hand tools, power tools, powder-actuated tools, hoisting, lifting and rigging equipment, measuring and testing equipment, PPE and safety equipment.

Task 8 Selects venting system.

Context

Venting systems convey products of combustion safely outside.

Sub-task

D-8.01 Selects venting system.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

D-8.01.01 knowledge of types of venting systems such as chimney, balanced flue and mechanical

D-8.01.02 knowledge of relevant sections of codes such as building, plumbing, electrical and safety codes

D-8.01.03 knowledge of manufacturers' specifications

D-8.01.04 knowledge of chimney construction

D-8.01.05 ability to measure clearances

D-8.01.06 ability to calculate capacities

Sub-task

D-8.02 Prepares location for termination.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

D-8.02.01 knowledge of building construction

D-8.02.02 knowledge of relevant sections of codes such as building, plumbing, electrical and safety codes

D-8.02.03 knowledge of material characteristics

D-8.02.04 knowledge of manufacturers' specifications

D-8.02.05 knowledge of outside influences such as trees, dust and snow

D-8.02.06 knowledge of regional conditions

D-8.02.07 ability to measure clearances

D-8.02.08 ability to perform basic carpentry

D-8.02.09 ability to visualize layout of system

D-8.02.10 ability to perform basic masonry

D-8.02.11 ability to remove liners

Sub-task

D-8.03 Installs venting components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

D-8.03.01 knowledge of types of venting components and liners

D-8.03.02 knowledge of manufacturers' specifications

D-8.03.03 knowledge of types of sealants

D-8.03.04 knowledge of types of fasteners and supports

D-8.03.05 ability to assemble components

D-8.03.06 ability to apply sealants

D-8.03.07 ability to fasten and secure venting and components

D-8.03.08 ability to install liners

D-8.03.09 ability to perform basic masonry

Sub-task

D-8.04 Secures venting system to structure.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

D-8.04.01 knowledge of types of fasteners and supports

D-8.04.02 knowledge of manufacturers' specifications

D-8.04.03 knowledge of relevant sections of codes such as building, plumbing, electrical and safety codes

D-8.04.04 ability to measure support points

D-8.04.05 ability to fasten venting system to structure

D-8.04.06 ability to apply sealants

D-8.04.07 ability to perform basic masonry

Task 9 — Installs equipment and components for combustion air and make-up air.

Context Equipment supplies adequate air for combustion and make-up air and to maintain balanced pressure in the mechanical room.

Sub-task

D-9.01 Selects equipment and components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

D-9.01.01	knowledge of appliances such as water heater and forced air furnace
D-9.01.02	knowledge of components such as fans, ducts and grilles
D-9.01.03	knowledge of appliance capacities
D-9.01.04	knowledge of relevant sections of codes such as building, plumbing, electrical and safety codes
D-9.01.05	ability to measure clearances
D-9.01.06	ability to calculate size
D-9.01.07	ability to determine location of intakes for combustion air and make-up air

Sub-task

D-9.02 Prepares location of equipment and components for combustion air and make-up air.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

D-9.02.01	knowledge of building construction
D-9.02.02	knowledge of relevant sections of codes such as building, plumbing, electrical and safety codes
D-9.02.03	knowledge of manufacturers' specifications
D-9.02.04	knowledge of material characteristics
D-9.02.05	knowledge of outside influences such as trees, dust and snow

D-9.02.06	knowledge of regional conditions
D-9.02.07	ability to perform basic carpentry
D-9.02.08	ability to measure clearances
D-9.02.09	ability to visualize layout of system

Sub-task

D-9.03 Assembles equipment and components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

D-9.03.01	knowledge of equipment and components
D-9.03.02	knowledge of manufacturers' specifications
D-9.03.03	knowledge of types of sealants
D-9.03.04	ability to apply sealants
D-9.03.05	ability to connect components

Sub-task

D-9.04 Secures equipment and components to structure.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

D-9.04.01	knowledge of fasteners and supports
D-9.04.02	knowledge of manufacturers' specifications
D-9.04.03	knowledge of relevant sections of codes such as building, plumbing, electrical and safety codes
D-9.04.04	ability to measure spacing for fasteners and supports
D-9.04.05	ability to fasten equipment and components to structure

Trends

Electro-mechanical controls are still in common use; however, there is a move towards electronic controls such as thermostats, relays and primary controls. There is an increased use of Electronically Commutated Motors (ECM) and EMS such as programmable thermostats, as they are more efficient. Variable speed drive motors permit greater comfort, energy savings and reduced noise.

Related Components

Controls (thermostat, aquastat and mixing), loads (motors, transformers and damper motors), sealants, fasteners, fans, wiring, interlocks, switches.

Tools and Equipment

Hand tools, power tools, powder-actuated tools, measuring and testing equipment, PPE and safety equipment.

Task 10 Installs electrical and electronic systems.

Context

Electrical and electronic systems are more user-friendly. They save fuel, work more efficiently and quietly, require less maintenance and provide increased comfort.

Sub-task

E-10.01 Selects controls and components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

E-10.01.01 knowledge of types of controls

E-10.01.02 knowledge of types of loads

E-10.01.03 knowledge of sequence of operation of controls

E-10.01.04 knowledge of application of controls and components

E-10.01.05 knowledge of relevant sections of codes such as building, plumbing, electrical and safety codes

E-10.01.06	knowledge of basic electronic theory as it relates to system components such as electronic controls, ECM and hydronic mixing controls
E-10.01.07	knowledge of basic electrical principles as they relate to system operation
E-10.01.08	ability to understand the system and its design

Sub-task

E-10.02 Selects location of controls and components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

E-10.02.01	knowledge of positioning of controls, loads and wiring
E-10.02.02	knowledge of manufacturers' specifications
E-10.02.03	knowledge of relevant sections of electrical, building and oil codes
E-10.02.04	ability to position controls, loads and wiring
E-10.02.05	ability to measure distances
E-10.02.06	ability to recognize physical and environmental limitations of controls and loads

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Sub-task

E-10.03 Installs controls and components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

E-10.03.01	knowledge of fasteners and supports
E-10.03.02	knowledge of manufacturers' specifications
E-10.03.03	knowledge of relevant sections of codes such as building, plumbing, electrical and safety codes
E-10.03.04	knowledge of basic carpentry skills
E-10.03.05	ability to install wire
E-10.03.06	ability to follow wiring diagram
E-10.03.07	ability to fasten controls and components

Task 11 Tests electrical and electronic systems.

Context Oil heat system technicians are responsible for testing related electrical and electronic systems for safety and functionality.

Sub-task

E-11.01 Cycles appliance controls.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

E-11.01.01 knowledge of operation of controls

E-11.01.02 knowledge of sequence of operation of system

E-11.01.03 ability to operate appliance controls

Sub-task

E-11.02 Checks operating and safety controls.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

E-11.02.01 knowledge of system operation

E-11.02.02 knowledge of circuits

E-11.02.03 knowledge of set points

E-11.02.04 ability to override operating components to verify safety controls

E-11.02.05 ability to trace circuits

E-11.02.06 ability to verify that controls operate to system specifications through full cycle

Sub-task

E-11.03 Checks accessories and components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

E-11.03.01	knowledge of types of accessories such as zone valves, booster pumps and air cleaning devices
E-11.03.02	knowledge of types of components such as circulators, blower motors and burners
E-11.03.03	knowledge of system operation
E-11.03.04	knowledge of circuits
E-11.03.05	ability to use multi-meters and diagnostic equipment
E-11.03.06	ability to test circuits, accessories and components
E-11.03.07	ability to interpret readings
E-11.03.08	ability to verify that circuits, accessories and components operate to system specifications through full cycle

Sub-task

E-11.04 Sets up operating parameters.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

E-11.04.01	knowledge of system specifications
E-11.04.02	knowledge of operating controls such as thermostat, aquastat and fan control
E-11.04.03	ability to adjust controls
E-11.04.04	ability to adjust equipment and components to meet system design

BLOCK F MAINTENANCE, DIAGNOSIS, REPAIR AND REMOVAL

Trends

There are more complex systems requiring technical repair skills. New equipment is environmentally friendly and longer lasting. There are stricter regulations regarding the disposal of waste goods.

Related Components

All appliances and components apply.

Tools and Equipment

See Appendix A.

Task 12 Maintains oil-fired heating systems and components.

Context

Maintenance of oil-fired systems helps to ensure that the system operates safely, efficiently and economically. These systems include all oil-fired appliances as well as portable heating equipment.

Sub-task

F-12.01 Checks oil-fired heating system and components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

F-12.01.01 knowledge of equipment and its operation

F-12.01.02 knowledge of service history

F-12.01.03 ability to determine condition of equipment

F-12.01.04 ability to identify potential problem areas

Sub-task

F-12.02 Cleans components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

F-12.02.01 knowledge of cleaning methods such as vacuuming, flushing and washing

F-12.02.02 knowledge of cleaning materials

F-12.02.03 ability to drain and recharge expansion tanks

F-12.02.04 ability to clean distribution fan

F-12.02.05 ability to clean burner components

F-12.02.06 ability to clean exhaust components such as sidewall vents, direct vents, smoke pipe and chimneys

F-12.02.07 ability to set or adjust temperature and pressure controls

Sub-task

F-12.03 Changes preventative maintenance components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

F-12.03.01 knowledge of types of preventative maintenance components such as nozzles, oil filters, air filters, fan belts and gaskets

F-12.03.02 knowledge of component specifications

F-12.03.03 ability to access components

F-12.03.04 ability to install new components

Sub-task

F-12.04 Lubricates moving components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

F-12.04.01 knowledge of types of lubricants

F-12.04.02 knowledge of lubrication requirements such as frequency, locations and amount of lubricant

F-12.04.03 ability to apply lubricant

Task 13 Diagnoses oil-fired heating systems and components.

Context Oil heat system technicians must be familiar with diagnostic techniques to enable safe, economical and efficient repairs.

Sub-task

F-13.01 Checks for electrical problems.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

F-13.01.01 knowledge of sequence of operation

F-13.01.02 knowledge of basic electrical principles

F-13.01.03 knowledge of electrical testing procedures

F-13.01.04 ability to interpret component schematics

F-13.01.05 ability to check for polarity

F-13.01.06 ability to check for continuity

F-13.01.07 ability to check voltage

F-13.01.08 ability to check amperage

F-13.01.09 ability to check resistance

Sub-task

F-13.02 Checks for burner problems.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

F-13.02.01 knowledge of burner operation

F-13.02.02 knowledge of burner components

F-13.02.03 knowledge of safety features such as primary controls and flame sensors

F-13.02.04 knowledge of combustion testing procedures

F-13.02.05 ability to check fuel supply

F-13.02.06 ability to check ignition

F-13.02.07 ability to check flame

F-13.02.08 ability to check safety features

Sub-task

F-13.03 Checks for distribution problems.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

F-13.03.01 knowledge of distribution systems and components

F-13.03.02 knowledge of distribution problems such as no heat, insufficient heat and excessive heat

F-13.03.03 knowledge of testing procedures

F-13.03.04 ability to isolate source of problem

Sub-task

F-13.04 Checks for problems with combustion air and make-up air.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

F-13.04.01 knowledge of combustion air and make-up air requirements

F-13.04.02 knowledge of building alterations

F-13.04.03 knowledge of testing procedures

F-13.04.04 ability to check for blockages

F-13.04.05 ability to check pressure differential

Task 14 Repairs oil-fired heating systems and components.

Context Oil heat system technicians repair oil-fired heating systems and components in order to return the system to its correct and safe operation.

Sub-task

F-14.01 Corrects electrical problems.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

F-14.01.01 knowledge of basic electrical principles

F-14.01.02 knowledge of relevant sections of electrical codes

F-14.01.03 ability to interpret component schematics

F-14.01.04 ability to lock out equipment

F-14.01.05 ability to reset switches and breakers

F-14.01.06 ability to replace defective electrical components

F-14.01.07 ability to repair damaged wires and terminals

Sub-task

F-14.02 Corrects burner problems.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

F-14.02.01 knowledge of burner operation

F-14.02.02 knowledge of burner components

F-14.02.03 knowledge of safety features

F-14.02.04 ability to interpret component schematics

F-14.02.05 ability to repair and replace defective burner components

F-14.02.06 ability to set operating parameters

F-14.02.07 ability to reset burner components

Sub-task

F-14.03 Corrects distribution problems.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

F-14.03.01 knowledge of distribution systems and components

F-14.03.02 knowledge of building alterations

F-14.03.03 ability to interpret component schematics

F-14.03.04 ability to repair and replace defective distribution components

F-14.03.05 ability to purge hydronic distribution system

F-14.03.06 ability to realign and adjust drive belts and pulleys

F-14.03.07 ability to set operating parameters

Task 15 Removes appliances and components.

Context Unsafe, inefficient and defective appliances and components are removed by oil heat system technicians. Proper storage and disposal of waste products and components is imperative.

Sub-task

F-15.01 Decommissions appliances and components.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

F-15.01.01 knowledge of WHMIS

F-15.01.02 knowledge of material handling hazards

F-15.01.03 ability to identify waste products such as fuel tanks, oil, glycol, mercury, heavy metals, asbestos and contaminated soil

F-15.01.04 ability to identify products that can be recycled

F-15.01.05 ability to disconnect utilities

F-15.01.06 ability to drain system

F-15.01.07 ability to seal breeches

F-15.01.08 ability to strap ductwork and piping

F-15.01.09 ability to disassemble appliance

Sub-task

F-15.02 Disposes of waste products.

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
yes	yes	yes	yes	ND	ND	ND	ND	ND	NV	yes	yes	NV

Supporting Knowledge & Abilities

F-15.02.01 knowledge of jurisdictional guidelines and requirements for storage and disposal of removed components

F-15.02.02 knowledge of containment systems

F-15.02.03 knowledge of WHMIS

F-15.02.04 knowledge of TDG regulations and signage

F-15.02.05	knowledge of local resources for disposal such as environmental agencies, coast guard and certified disposal companies
F-15.02.06	ability to handle waste products and containers

APPENDICES

APPENDIX A TOOLS AND EQUIPMENT

Hand Tools

adjustable pliers
adjustable wrenches
alignment bars
Allen wrenches
aviation snips
ball-peen hammer
box-end wrenches
burner brush
caulking gun
chipping hammer
claw hammer
combination wrenches
copper tube cutter
duct folder
duct stretcher
easy out
expanding tool
flame mirror
flaring tool
flashlight
folding pliers
grease gun
hacksaw
hand hole saw
levels
linesman pliers
locking pliers
needle nose pliers
nozzle wrenches
nut drivers
oil filter wrenches
open end wrenches
pipe wrenches
plastic pipe crimper
plastic pipe cutter
plumb-bob
porcelain cutter
pry bars
pullers
reamers
scraper
screwdrivers
sheet metal crimper
sheet metal hammer
side cutters
socket wrenches
steel pipe cutters
steel pipe reamers
square
tap and die sets
torque screwdrivers
torque wrenches
trouble light
trowels
tube benders
tube reamers
utility knife
wire crimpers
wire strippers

Power Tools

circular saw
compaction equipment
compressed air equipment
cut-off saw
electrical or battery operated drill
hammer drill
powder actuated tools
power grinder
power nibbler
power pipe threaders
pressure washer
reciprocating saw

jigsaw
masonry cutting tool
vacuum cleaner

Measuring and Testing Equipment

ammeters
anemometer
calculator
calliper gauge
callipers
CO analyzer
CO_2 testing equipment
control component tester
draft testing equipment
flame signal meter
heat gun
hygrometer
magnehelic gauge
manometer
measuring tape
megohmmeter
multimeter
O_2 testing equipment
potentiometer
pressure gauges
pyrometer
sling psychrometer
smoke testing equipment
stud sensor
temperature testing equipment
test lamp
T-gauges
ultrasound
vacuum gauges
velocity meters

Hoisting, Lifting and Rigging Equipment

chain falls
come-alongs
hand cart
hydraulic jack
ladder
rigging equipment
scaffolding
scissor lift

Soldering, Flaring and Threading Equipment

cutting torches
magnetic patches
manual pipe threader
soldering torch

Personal Protective Equipment (PPE) and Safety Equipment

dust masks
ear plugs
face shields
fall arrest equipment
fire extinguishers
first aid kit
gas detection devices
gloves
hard hats
pylon
respirator
safety boots
safety glasses
safety tape

Business and Communication Equipment

adding machine
computers
cell phones
digital cameras
electronic messaging device
fax machine
photocopier
printer
video cameras

APPENDIX B GLOSSARY

appliance	a device to convert fuel into energy, and including all components, controls, wiring, and piping required as part of the device by the applicable standard
boiler	an appliance intended to supply hot water or steam for space heating, processing or power purposes
burner	a device or group of devices forming an integral unit for the introduction of fuel, with or without air or oxygen, into the combustion zone for ignition
chimney	a primarily vertical shaft enclosing at least one vent for conducting flue gases to the outside atmosphere
combustion air	the air required for satisfactory combustion of fuel, including excess air
component	an essential part of an appliance that may be certified separately from the appliance
damper	a movable plate or valve for regulating the flow of air or flue gas
de-aerators	a device used for the removal of oxygen and other dissolved gases from the boiler feed water
decommission	take out of service, dismantle and make safe
dump zone	safety bypass that diverts the excess temperature and pressure in the heating system
forced air furnace	a furnace equipped with a blower which provides the primary means for circulation of air (refer to furnace)
fuel oil	kerosene or any hydrocarbon oil as classified in CSA Standard B140.0, General Requirements for Oil Burning Equipment
furnace	a space-heating appliance, using warm air as the heating medium, and usually having provision for the attachment of ducts
heat exchanger	the firebox and any auxiliary heat transfer surfaces within the casing of an appliance

ignition	establishment of a flame
incinerator	an appliance in which combustible wastes are ignited and burned
indirect water heater	a water heater which derives its heat from a heating medium such as warm air, steam or hot water
limit control	a safety control intended to prevent unsafe conditions of temperature, pressure or liquid level
make-up air	fresh air that is introduced to the furnace room to replace air that has been exhausted
manual damper	an adjustable damper manually set and locked in the desired position
piping	the fuel conduits of circular cross section that are of sufficient wall thickness and or suitable outside diameter for threading to Iron Pipe Size (IPS) Standards, and that are specified by nominal inside diameter (ID)
plenum	a chamber for distributing warm air from a furnace to the supply ducts (supply plenum), or for receiving air to be heated by the furnace (return plenum)
retrofit	to replace an obsolete or defective component for the purpose of updating the heating system
safety control	an automatic control of a safety control system that is intended to automatically prevent unsafe operation of the controlled equipment, and may include relays, switches and other auxiliary equipment and interconnecting circuitry
storage tank	a tank for the storage of fuel and from which the fuel-burning equipment is not intended to be fed automatically
tubing	fuel conduits of circular cross section that are not of sufficient wall thickness or of suitable outside diameter to permit threading to Iron Pipe Size (IPS) Standards, and are specified by outside diameter (OD)
valve	a device by which the flow of a fluid may be started, stopped or regulated by a movable part which opens or obstructs passage
vent	an enclosed passageway for conveying flue gases

venting	the removal of flue gases or vent gases to the outside air by means of building openings or venting systems
venting system	a system for the removal of flue gases or vent gases to the outside air by means of vent connectors, chimneys, gas vents or exhaust systems, natural or mechanical
water heater	an appliance intended for the heating of water for plumbing services

APPENDIX C ACRONYMS

COHA	Canadian Oil Heat Association
ECM	Electronically Commutated Motors
EMS	energy management system
HVAC	heating, ventilation and air conditioning
ID	inside diameter
IPS	Iron Pipe Size
OD	outside diameter
OH&S	Occupational Health and Safety
PPE	personal protective equipment
TDG	Transportation of Dangerous Goods
WHMIS	Workplace Hazardous Materials Information System

APPENDIX D BLOCK AND TASK WEIGHTING

BLOCK A COMMON OCCUPATIONAL SKILLS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	6	5	5	7	ND	ND	ND	ND	ND	NV	5	10	NV	6%

Task 1 Uses tools and equipment.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	79	30	70	65	ND	ND	ND	ND	ND	NV	40	45	NV	55%

Task 2 Organizes work.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	21	70	30	35	ND	ND	ND	ND	ND	NV	60	55	NV	45%

BLOCK B FUEL SUPPLY AND STORAGE SYSTEMS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	16	13	25	15	ND	ND	ND	ND	ND	NV	15	15	NV	17%

Task 3 Installs fuel storage tanks.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	50	50	45	30	ND	ND	ND	ND	ND	NV	40	50	NV	44%

Task 4 Installs fuel supply system.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	50	50	55	70	ND	ND	ND	ND	ND	NV	60	50	NV	56%

BLOCK C OIL-FIRED HEATING SYSTEMS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	25	25	20	19	ND	ND	ND	ND	ND	NV	30	25	NV	24%

Task 5 Installs and retrofits oil-fired and wood/oil appliances and components.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	18	10	20	20	ND	ND	ND	ND	ND	NV	10	25	NV	17%

Task 6 Installs forced-air heating systems.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	35	35	30	30	ND	ND	ND	ND	ND	NV	30	45	NV	34%

Task 7 Installs hydronic heating systems.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	47	55	50	50	ND	ND	ND	ND	ND	NV	60	30	NV	49%

BLOCK D VENTING, COMBUSTION AIR AND MAKE-UP AIR

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	10	12	15	15	ND	ND	ND	ND	ND	NV	20	20	NV	15%

Task 8 Installs venting systems.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	46	60	45	53	ND	ND	ND	ND	ND	NV	60	55	NV	53%

Task 9 Installs equipment and components for combustion air and make-up air.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	54	40	55	47	ND	ND	ND	ND	ND	NV	40	45	NV	47%

BLOCK E ELECTRICAL/ELECTRONIC SYSTEMS

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	25	20	15	22	ND	ND	ND	ND	ND	NV	20	10	NV	19%

Task 10 Installs electrical and electronic systems.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	46	50	70	50	ND	ND	ND	ND	ND	NV	40	40	NV	49%

Task 11 Tests electrical and electronic systems.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	54	50	30	50	ND	ND	ND	ND	ND	NV	60	60	NV	51%

BLOCK F MAINTENANCE, DIAGNOSIS, REPAIR AND REMOVAL

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	National Average
%	18	25	20	22	ND	ND	ND	ND	ND	NV	10	20	NV	19%

Task 12 Maintains oil-fired heating systems and components.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	19	30	20	21	ND	ND	ND	ND	ND	NV	10	25	NV	21%

Task 13 Diagnoses oil-fired heating systems and components.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	39	30	35	40	ND	ND	ND	ND	ND	NV	60	35	NV	40%

Task 14 Repairs oil-fired heating systems and components.

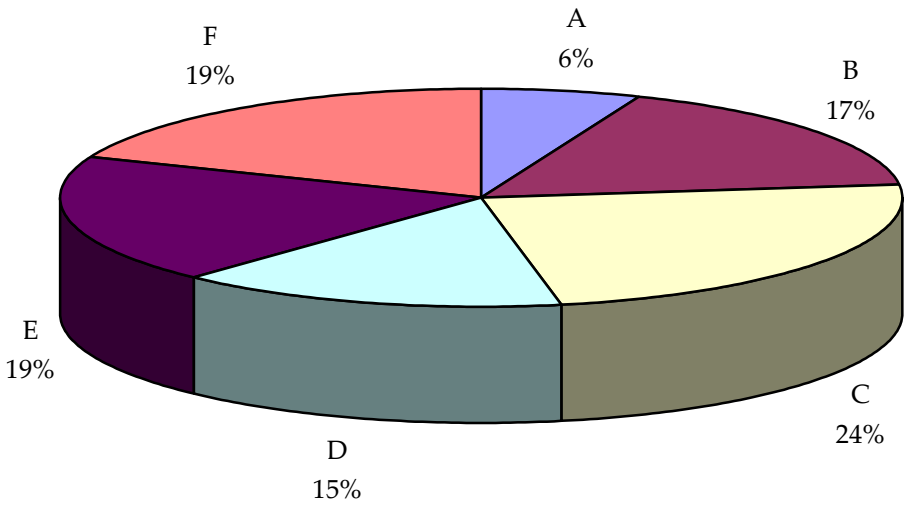
	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	31	30	35	29	ND	ND	ND	ND	ND	NV	20	30	NV	29%

Task 15 Removes appliances and components.

	NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU	
%	11	10	10	10	ND	ND	ND	ND	ND	NV	10	10	NV	10%

APPENDIX E

PIE CHART*



TITLES OF BLOCKS

BLOCK A	Common Occupational Skills	BLOCK D	Venting, Combustion Air and Make-up Air
BLOCK B	Fuel Supply and Storage Systems	BLOCK E	Electrical/Electronic Systems
BLOCK C	Oil-Fired Heating Systems	BLOCK F	Maintenance, Diagnosis, Repair and Removal

*Average percentage of the total number of questions on an interprovincial examination, assigned to assess each block of the analysis, as derived from the collective input from workers within the occupation from all areas of Canada. The Interprovincial examination for this trade has 110 questions.

APPENDIX F

TASK PROFILE CHART — Oil Heat System Technician

BLOCKS	TASKS	SUB-TASKS				
A – COMMON OCCUPATIONAL SKILLS	1. Uses tools and equipment.	1.01 Uses hand tools.	1.02 Uses power tools.	1.03 Uses powder-actuated tools. (NOT COMMON CORE)	1.04 Uses measuring and testing equipment.	1.05 Uses hoisting, lifting and rigging equipment.
		1.06 Uses ladders and platforms.	1.07 Uses soldering, flaring and threading tools.	1.08 Uses personal protective equipment (PPE) and safety equipment.		
	2. Organizes work.	2.01 Communicates with others.	2.02 Maintains clean and safe work environment.	2.03 Interprets codes and documentation.	2.04 Completes documentation.	2.05 Interprets drawings.
		2.06 Performs basic distribution layout.	2.07 Organizes material and components.	2.08 Commissions appliances and components.		
B – FUEL SUPPLY AND STORAGE SYSTEMS	3. Installs fuel storage tanks.	3.01 Selects fuel storage tanks.	3.02 Determines fuel storage tank location.	3.03 Prepares location for fuel storage tanks.	3.04 Positions fuel storage tanks.	3.05 Installs fuel storage tank components.
		3.06 Installs fill and vent pipes.				
	4. Installs fuel supply system.	4.01 Selects fuel supply components.	4.02 Installs fuel supply components.			

BLOCKS	TASKS	SUB-TASKS				
C – OIL-FIRED HEATING SYSTEMS	5. Installs and retrofits oil-fired and wood/oil appliances and components.	5.01 Selects appliances.	5.02 Positions appliances.	5.03 Installs components on appliance.	5.04 Connects fuel supply to appliance.	5.05 Connects electrical supply to appliance.
		5.06 Connects vent/exhaust piping to appliance.	5.07 Installs dump zones for wood/oil systems.	5.08 Connects drain to appliance.		
	6. Installs forced-air heating systems.	6.01 Assembles ductwork.	6.02 Installs ductwork.			
	7. Installs hydronic heating systems.	7.01 Assembles boilers.	7.02 Installs hydronic distribution system.	7.03 Installs indirect water.	7.04 Installs oil-fired water heater.	7.05 Installs hydronic heating system components.
D – VENTING, COMBUSTION AIR AND MAKE-UP AIR	8. Installs venting systems.	8.01 Selects venting system.	8.02 Prepares locations for termination.	8.03 Installs venting components.	8.04 Secures venting system to structure.	
	9. Installs equipment and components for combustion air and make-up air.	9.01 Selects equipment and components.	9.02 Prepares location for equipment and components for combustion air and make-up air.	9.03 Assembles equipment and components.	9.04 Secures equipment and components to structure.	
E – ELECTRICAL/ ELECTRONIC SYSTEMS	10. Installs electrical and electronic systems.	10.01 Selects controls and components.	10.02 Selects location of controls and components.	10.03 Installs controls and components.		
	11. Tests electrical and electronic systems.	11.01 Cycles appliance controls.	11.02 Checks operating and safety controls.	11.03 Checks accessories and components.	11.04 Sets up operating parameters.	

BLOCKS	TASKS	SUB-TASKS			
F – MAINTENANCE, DIAGNOSIS, REPAIR AND REMOVAL	12. Maintains oil-fired heating systems and components.	12.01 Checks oil-fired heating system and components.	12.02 Cleans components.	12.03 Changes preventative maintenance components.	12.04 Lubricates moving components.
	13. Diagnoses oil-fired heating systems and components.	13.01 Checks for electrical problems.	13.02 Checks for burner problems.	13.03 Checks for distribution problems.	13.04 Checks for problems with combustion air and make-up air.
	14. Repairs oil-fired heating systems and components.	14.01 Corrects electrical problems.	14.02 Corrects burner problems.	14.03 Corrects distribution problems.	
	15. Removes appliances and components.	15.01 Decommissions appliances and components.	15.02 Disposes of waste products.		