



NOVA SCOTIA
APPRENTICESHIP
AGENCY

NOVA SCOTIA
OCCUPATIONAL STANDARD
FORESTRY EQUIPMENT
OPERATOR
(HARVESTER / FORWARDER)

FORWARD

This occupational standard was developed by a committee of industry experts in the field led by a facilitator from the Nova Scotia Apprenticeship Agency (NSAA). It has the following objectives:

- to describe and group the tasks performed by skilled workers
- to identify which tasks are performed by skilled workers
- to develop instruments for use in the preparation of 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.

Any questions, comments, or suggestions for changes, corrections, or revisions to this standard or any of its related products may be forwarded to:

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STRUCTURE OF THE OCCUPATIONAL STANDARD

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

Description of the trade: an overview of the trade's duties

Essential Skills Summary: An overview of how each of the 9 essential skills is applied in this trade

Industry Expected Performance: description of the expectations regarding the level of performance of the tasks, including information related to specific codes, regulations and standards that must be observed

Pie Chart of Red Seal Examination Weightings: a graph which depicts the percentages of exam questions assigned to the major work activities

Task Matrix: a chart which outlines graphically the major work activities, tasks and sub-tasks of this standard

Major Work Activity (MWA): the largest division within the standard that is comprised of a distinct set of trade activities

Task: distinct actions that describe the activities within a major work activity

Task Descriptor: a general description of the task

Sub-task: distinct actions that describe the activities within a task

Range of Variables: elements and examples (not all inclusive) that provide a more in-depth description of a term used in the performance criteria and evidence of attainment

DESCRIPTION OF FORESTRY EQUIPMENT OPERATOR (HARVESTER / FORWARDER)

Forestry equipment operators operate mechanized harvesters and forwarders used in the harvesting, processing, and transportation of roundwood in logging operations. They work in cut-to-length forestry systems to fell, delimb, buck, sort, and move roundwood from the stump to roadside.

Forestry equipment operators (harvester and forwarder) are employed by logging contractors, forest companies, private woodlot owners, and forest management organizations. They may also work in land-clearing, utility corridor maintenance, wildfire cleanup, and other resource operations.

Harvester operators use computer-controlled processing heads to fell and process trees with precision, measuring lengths and diameters, to produce forest products that meet market and mill requirements. Forwarder operators load, transport, sort and unload logs safely and efficiently using articulated machines designed to travel over challenging terrain. Operators are responsible for routine equipment maintenance, including daily inspections, greasing, cleaning, and refueling, as well as troubleshooting minor mechanical issues. They must also prepare machines for transport between worksites.

Noise, rugged terrain, weather extremes, and remote locations can make communication and safety more challenging. Radio communication is common, but distance, machine noise, challenging environmental conditions, and limited visibility often require operators to rely on sound judgment and strict safety procedures to coordinate activities.

Key attributes for individuals entering this trade include strong spatial awareness, good eye-hand coordination, mechanical aptitude, and a high level of alertness and safety consciousness. Harvester and forwarder operators spend long periods seated in climate-controlled cabs, but the job may also involve climbing onto machines, walking uneven ground, and performing physical tasks related to maintenance and site setup.

ESSENTIAL SKILLS SUMMARY

Essential skills are needed for work, learning and life. They provide the foundation for learning all other skills and enable people to evolve with their jobs and adapt to workplace change.

Through extensive research, the Government of Canada and other national and international agencies have identified and validated nine essential skills. These skills are used in nearly every occupation and throughout daily life in different ways. The nine identified skills are:

- Reading
- Document Use
- Writing
- Oral Communication
- Numeracy
- Thinking
- Digital Technology
- Working with Others
- Continuous Learning

A series of CCDA-endorsed tools have been developed to support apprentices in their training and to be better prepared for a career in the trades. The tools can be used independently or with the assistance of a tradesperson, trainer, employer, teacher or mentor to:

- understand how essential skills are used in the trades;
- learn about individual essential skills strengths and areas for improvement; and
- improve essential skills and increase success in an apprenticeship program.

Tools are available online or for order at:

<http://www.esdc.gc.ca/eng/jobs/les/tools/index.shtml>.

The application of these skills may be described throughout this document within the competency statements which support each subtask of the trade. For a complete description of the nine essential skills for various trades, please visit:

<https://www.jobbank.gc.ca/essentialskillsresults/297>

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 (CNZEEA).
- 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.

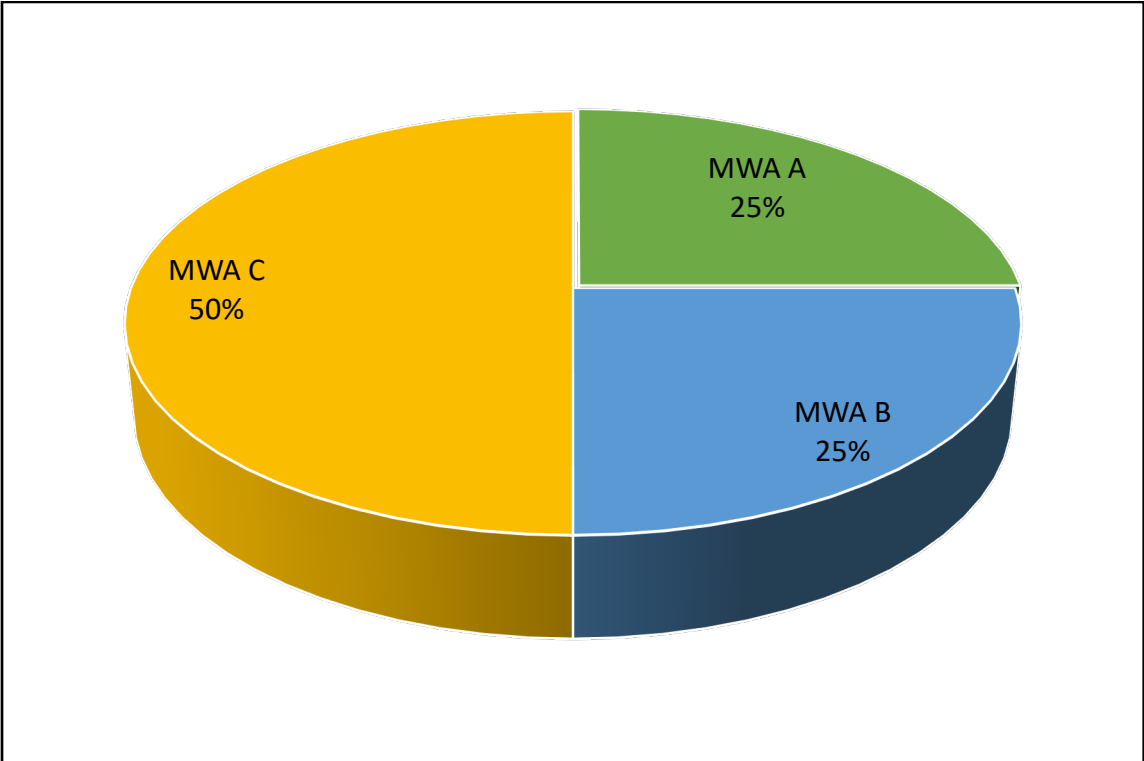
In apprenticeship, as well as in ongoing professional development, employers and instructors should encourage learning about these concepts, why they are important, how they are implemented, and the overarching targets they are aiming to achieve.

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

INDUSTRY-EXPECTED PERFORMANCE

All tasks must be performed according to Nova Scotia regulations and standards. All health and safety standards must be respected and observed. Work should be performed efficiently and at a high quality without material waste and minimizing environmental impact. All requirements of the manufacturer specifications, employers and client expectations must be met. At a journey person level of performance, all tasks must be completed with minimal direction and supervision. As a journey person progresses in their career there is an expectation they continue to upgrade their skills and knowledge to keep pace with industry and promote continuous learning in their trade through mentoring of apprentices.

PIE CHART OF CERTIFICATION EXAM WEIGHTINGS



- MWA A Performs common occupational skills 25%
- MWA B Performs inspections and basic maintenance 25%
- MWA C Forestry equipment operator tasks 50%

This pie chart represents a breakdown of the Forestry Equipment Operator Nova Scotia provincial certification examination. The task matrix on the following pages indicates the breakdown of tasks and sub-tasks within each major work activity and the breakdown of questions assigned to the Tasks. The Provincial certification exam for this trade has 100 questions.

FORESTRY EQUIPMENT OPERATOR TASK MATRIX

A – PERFORMS COMMON OCCUPATIONAL SKILLS

25%

Task A-1 Performs safety-related functions 25%	A-1.01 Maintains safe work environment	A-1.02 Uses personal protective equipment (PPE) and safety equipment	A-1.03 Performs lock-out and tag-out procedures	A-1.04 Participates in healthy and respectful work environment
Task A-2 Uses tools and equipment 25%	A-2.01 Uses hand and power tools	A-2.02 Uses measuring and testing equipment	A-2.03 Uses heating and cutting equipment	
Task A-3 Organizes work 25%	A-3.01 Uses documentation and reference material	A-3.02 Interprets maps and aerial photographs	A-3.03 Plans worksite implementation and safety strategies	
Task A-4 Performs routine trade activities 25%	A-4.01 Assess potential hazards	A-4.02 Practices environmental stewardship	A-4.03 Handles materials and supplies	
Task A-5 Maintains continuous learning 0%	A-5.01 Upskills in new trade practices and procedures	A-5.02 Upskills in emerging technologies		
Task A-6 Uses communication and mentoring techniques 0%	A-6.01 Uses communication techniques	A-6.02 Uses mentoring techniques		

B – Performs Inspections and Basic Maintenance

25%

Task B-7 Performs inspections. 30%	B-7.01 Performs pre-operational inspections	B-7.02 Performs post-operational inspections		
Task B-8 Performs maintenance procedures 70%	B-8.01 Maintains operator station	B-8.02 Maintains drivetrain systems, tires, rims and tracks	B-8.03 Performs preventative maintenance	B-8.04 Performs basic maintenance of attachments
	B-8.05 Perform minor repairs			

C – Forestry Equipment Operator Tasks

50%

Task C-9 Performs basic functions 35%	C 9.01 Maintains control of equipment	C 9.02 Manages equipment performance	C 9.03 Performs emergency procedures	
Task C-10 Transports equipment 15%	C 10.01 Prepares equipment for transportation	C 10.02 Loads equipment and attachments for transportation	C 10.03 Assists in securing equipment for transportation	C 10.04 Unloads equipment and attachments
HARVESTER ONLY				
Task C-11 Performs product harvesting 50%	C 11.01 Plans harvesting approach	C 11.02 Performs felling	C 11.03 Performs quality control	C 11.04 Calibrates harvester head
FORWARDER ONLY				
Task C-12 Performs product extraction 50%	C 12.01 Plans product extraction	C 12.02 Extracts product	C 12.03 Unloads product at roadside	C 12.04 Uses temporary forwarding bridges

MAJOR WORK ACTIVITY A

Performs common occupational skills

TASK A-1 Performs safety-related functions

Task Descriptor

Forestry Equipment Operators create and maintain a safe work environment to ensure the safety of personnel and equipment. They must be familiar with the care and use of personal protective equipment (PPE) and safety equipment. They must participate in ensuring a healthy and inclusive workplace.

A-1.01 Maintains safe work environment

Performance Criteria

1.01.01	recognize hazards
1.01.02	mitigate risks associated with hazards
1.01.03	follow safe work procedures
1.01.04	maintain an organized work site
1.01.05	recognize temporary safety markers
1.01.06	perform housekeeping duties
1.01.07	coordinate tasks with other workers
1.01.08	recognize and report unsafe conditions

Range of Variables

hazards: personal, environmental, power lines, chemicals, slopes, spills, defective equipment, hydraulic and high-pressure systems

temporary safety markers: flagging tape, signage, pylons, barricades, high stumps

housekeeping duties: cleaning worksite, organizing tools and equipment after use

A-1.02 Uses personal protective equipment (PPE) and safety equipment

Performance Criteria

1.02.01	select, wear and ensure proper fit of PPE
1.02.02	inspect and identify expired, defective or damaged PPE
1.02.03	locate and use safety equipment
1.02.04	clean and store PPE and safety equipment
1.02.05	inspect safety equipment and verify it is certified

Range of Variables

PPE: ear protection, hard hats, safety glasses and goggles, face shields, safety boots, gloves, safety vests

defective or damaged PPE: excessive wear, cracked safety glasses, expired or uncertified PPE

safety equipment: fire extinguishers, eye wash stations, first aid kits, spill kits, tool guards

A-1.03 Performs lock-out and tag-out procedures

Performance Criteria

- 1.03.01 identify **issue requiring a lock-out**
- 1.03.02 establish and confirm **zero-energy state** of equipment and components
- 1.03.03 apply **lock-out device**
- 1.03.04 record lock-out information on tag attached to lock-out devices
- 1.03.05 verify isolation of equipment
- 1.03.06 notify appropriate personnel
- 1.03.07 remove tags and **lock-out devices** from equipment upon completion of task

Range of Variables

issues requiring a lockout: repairs, safety concerns, unauthorized startup

zero-energy state: potential, kinetic, pneumatic, hydraulic, electric, mechanical

lock-out devices: locks, blocks, chains, hasps, plugs, caps, blank-off plates

A-1.04 Participates in healthy and respectful work environment

Performance Criteria

- 1.04.01 perform self-assessment of physical and mental health
- 1.04.02 identify **supports and resources** for personal mental health
- 1.04.03 identify **techniques to manage health and wellness**
- 1.04.04 assess personal job satisfaction
- 1.04.05 create plan to manage work-life balance
- 1.04.06 support and promote anti-**harassment** and anti-**discrimination** practices in workplace

Range of Variables

supports and resources: professional networks and associations, collaboration with colleagues and community members, counselling, mentoring, peer support groups

techniques to manage health and wellness: practicing techniques for remaining physically, mentally and emotionally “fit for work”; managing personal and work life; recognizing effects and consequences of alcohol, over-the-counter drugs, prescription drugs or illegal drugs before,

during and after work; maintaining good personal hygiene

personal job satisfaction: financial, work hours, flexibility, supports, working conditions

harassment: as defined by the Canadian and jurisdictional Human Rights Commissions

discrimination: as defined by the Canadian Human Rights Act and jurisdictional human rights laws

TASK A-2 Uses tools and equipment

Task Descriptor

This task describes the use and maintenance of tools and equipment that Forestry Equipment Operators use to perform tasks in their trade. Use of tools and equipment includes activities such as inspecting, storing, maintaining and performing minor repairs.

A-2.01 Uses hand and power tools

Performance Criteria

- 2.01.01 select **hand tools** and **power tools**
- 2.01.02 inspect hand and power tools for damage, wear and **unsafe conditions**
- 2.01.03 check batteries, chargers, oil and fuel levels
- 2.01.04 operate hand and power tools
- 2.01.05 **maintain** hand and power tools
- 2.01.06 repair or replace worn, damaged or defective tools
- 2.01.07 organize and store hand and power tools

Range of Variables

hand tools: utility knives, measuring tapes, wire brushes, wrenches

power tools: pneumatic, electric, hydraulic, gas, generators

unsafe conditions: missing parts, defective or missing guards, unsafe power cords

maintain: clean, lubricate, sharpen, charge

A-2.02 Uses measuring and testing equipment

Performance Criteria

- 2.02.01 select **measuring and testing** equipment
- 2.02.02 inspect measuring and testing equipment
- 2.02.03 perform measurements and calculations
- 2.02.04 maintain measuring and testing equipment
- 2.02.05 replace worn, damaged or defective equipment
- 2.02.06 organize and store measuring and testing equipment

Range of Variables

measuring and testing equipment: DMM, temperature gauge, caliper, hydraulic pressure gauge, clinometer

A-2.03 Uses heating and cutting equipment

Performance Criteria

- 2.03.01 select **heating and cutting equipment**
- 2.03.02 identify potential hazards and implement measures to minimize risk
- 2.03.03 set up **heating and cutting** equipment
- 2.03.04 prepare work area
- 2.03.05 perform basic heating and cutting processes
- 2.03.06 monitor area for fire watch
- 2.03.07 inspect and identify damaged, worn or unsafe heating and cutting equipment
- 2.03.08 replace worn, damaged or defective heating and cutting equipment
- 2.03.09 store and secure heating and cutting equipment and **components**

Range of Variables

heating & cutting equipment oxy-acetylene, propane

components: work clamps, hoses, torches, heating and cutting tips, compressed gas cylinders

TASK A-3 Organizes work

Task Descriptor

Forestry Equipment Operators organize their work by using trade related documentation, determining project requirements, planning jobs, interpreting drawings and specifications, and handling materials.

A-3.01 Uses documentation and reference material

Performance Criteria

- 3.01.01 locate and interpret **documentation and reference material**
- 3.01.02 utilize digital technology
- 3.01.03 draw sketches
- 3.01.04 complete **written and electronic documents**
- 3.01.05 analyze and communicate results
- 3.01.06 organize and store documentation

Range of Variables

documentation and reference material: manufacturers' specifications, site-specific documents, drawings, permits, work orders, contracts, technical data sheets, equipment maintenance documents, safety data sheets (SDS), hazardous materials logs, safe work procedures (SWP), job safety analysis (JSA)

written and electronic documents: time sheets, pre- and post-operational inspection checklists, health and safety forms, equipment logbooks, injury, incident reports, work orders and hazard analysis reports

A-3.02 **Interprets maps and aerial photographs**

Performance Criteria

- 3.02.01 locate and interpret information on maps and aerial photographs
- 3.02.02 identify symbols and units of measurement
- 3.02.03 convert between metric and imperial units of measurement
- 3.02.04 verify accuracy of maps and aerial photographs
- 3.02.05 document and communicate any inaccuracies or inconsistencies

Range of Variables

N/A

A-3.03 **Plans worksite implementation and safety strategies**

Performance Criteria

- 3.03.01 identify scope of project or task
- 3.03.02 assist in developing worksite procedures and timelines
- 3.03.03 assist in development of remote location plan
- 3.03.04 provide input into the emergency response plan (ERP)
- 3.03.05 provide input into the location of fuel storage
- 3.03.06 coordinate tasks with other workers

Range of Variables

N/A

TASK A-4 Performs routine trade activities

Task Descriptor

Forestry Equipment Operators perform routine trade activities including evaluating site conditions, identifying hazards, and maintaining awareness of changing ground and environmental factors while working in remote locations. The role includes applying stewardship practices such as conserving soil and protecting water courses and wildlife. Operators handle materials and supplies by selecting, organizing, transporting, and disposing of them safely. They follow established plans and procedures to support safe, efficient, and environmentally responsible operations.

A-4.01 Assesses potential hazards

Performance Criteria

- 4.01.01 review remote location plan and initial job site plan
- 4.01.02 mark the location of known **hazards**
- 4.01.03 identify, mark and communicate potential and unidentified **hazards**
- 4.01.04 assess soil, ground and environmental **conditions**
- 4.01.05 continuously monitor and evaluate work area for changing **conditions**

Range of Variables

hazards: ground conditions (bedrock, water, ice), utilities (water, power lines, gas, etc.), overhead hazards, proximity to obstructions, pedestrian and vehicle traffic

conditions: run-offs, terrain, unmapped watercourses, rapidly changing weather

A-4.02 Practices environmental stewardship

Performance Criteria

- 4.02.01 apply forestry best management practices
- 4.02.02 organize workflow to minimize environmental impact
- 4.02.03 recognize and mitigate **environmental hazards**
- 4.02.04 report **environmental hazards**
- 4.02.05 practice due diligence procedures to avoid contamination
- 4.02.06 practice **soil conservation**
- 4.02.07 practice wildlife conservation
- 4.02.08 recognize and report species at risk

Range of Variables

environmental hazards: contamination (water, air, soil), hazardous materials

soil conservation: surface run-off, wetlands, buffer zones, rutting, soil compaction, erosion

A-4.03 Handles materials and supplies

Performance Criteria

- | | |
|---------|---|
| 4.03.01 | accept and inspect materials and supplies |
| 4.03.02 | select and use materials and supplies |
| 4.03.03 | organize, maintain and store materials and supplies |
| 4.03.04 | handle hazardous materials |
| 4.03.05 | dispose of materials and supplies |
| 4.03.06 | transport materials and supplies |

Range of Variables

materials and supplies: oil, grease, antifreeze, fuel, DEF

TASK A-5 Maintains continuous learning

Task Descriptor

Forestry equipment operators enhance their knowledge by engaging in continuous learning, maintaining development plans, identifying learning supports, and addressing gaps through independent study. They use resources such as seminars, professional networks, and online tools to strengthen their skills. Operators keep up with emerging technologies and environmental principles and sustainable practices by reviewing new information, attending industry events, and communicating advancements to others.

A-5.01 Upskills in new trade practices and procedures

Performance Criteria

- | | |
|---------|--|
| 5.01.01 | apply continuous learning methods |
| 5.01.02 | develop and maintain personal and professional development plan |
| 5.01.03 | identify available supports and resources for learning |
| 5.01.04 | identify gaps in knowledge and implement independent learning techniques |

Range of Variables

continuous learning methods: actively engaging in performance review processes and taking action to address feedback, seeking out and actively participating in and embracing learning opportunities (seminars, webinars, trainings, podcasts, independent research), maintaining all required certifications and training, upgrading and maintaining computer and technology skills, sharing learning outcomes and concepts with others, transferring knowledge into practice
supports and resources: professional networks and associations, manufacturers' seminars, collaboration with colleagues and community members, counselling, mentoring, peer support

groups, online resources, trade shows

A-5.02 **Upskills in emerging technologies**

Performance Criteria

- 5.02.01 read **information** about latest advancements and emerging technologies
- 5.02.02 attend seminars, webinars, trade shows and information sessions
- 5.02.03 share information with colleagues, management and clients on new energy efficient equipment and explain their advantages

Range of Variables

information: manufacturers' literature, online resources, trade journals, magazines

TASK A-6 **Uses communication and mentoring techniques**

Task Descriptor

Learning in the trades is done primarily in the workplace with tradespeople passing on their skills and knowledge to apprentices, as well as sharing knowledge among themselves. Apprenticeship is about mentoring - learning workplace skills and passing them on. Because of the importance of this to Forestry Equipment Operators, this task covers the activities related to communication in the workplace and mentoring skills.

A-6.01 **Uses communication techniques**

Performance Criteria

- 6.01.01 demonstrate **communication practices** individually or in a group
- 6.01.02 use **active listening** practices
- 6.01.03 speak clearly using correct industry terminology to ensure understanding
- 6.01.04 receive and respond to instructions
- 6.01.05 receive and respond to feedback on work completed or performed
- 6.01.06 explain and provide feedback
- 6.01.07 use questions to improve communication
- 6.01.08 conduct and participate in safety and information meetings
- 6.01.09 send and receive electronic messages

Range of Variables

communication practices: verbal communication techniques, written communication techniques, electronic communication techniques, hand signal techniques

active listening: hearing, interpreting, reflecting, responding, paraphrasing, questioning

A-6.02**Uses mentoring techniques****Performance Criteria**

- 6.02.01 identify and communicate learning objective and point of lesson
- 6.02.02 link lesson to other lessons and project
- 6.02.03 demonstrate performance of a skill to an apprentice
- 6.02.04 set up conditions required for apprentice to practice a skill
- 6.02.05 assess an apprentice's ability to perform tasks with increasing independence
- 6.02.06 give supportive and corrective feedback
- 6.02.07 support apprentices in pursuing technical training opportunities
- 6.02.08 support anti-**harassment** and anti-**discrimination** practices in workplace
- 6.02.09 assess an apprentice's suitability to the trade during probationary period

Range of Variables

harassment: as defined by the Canadian and jurisdictional Human Rights Commissions

discrimination: as defined by the Canadian Human Rights Act and jurisdictional human rights laws

MAJOR WORK ACTIVITY B

Performs inspections and basic maintenance

TASK B-7 Performs inspections

Task Descriptor

Forestry equipment operators carry out detailed pre-operational inspections by closely examining the machine. They verify that all systems function properly before beginning work. After operations, they park equipment, complete shutdown procedures and de-energize the machine. All findings are documented to support safe, consistent equipment performance.

B-7.01 Performs pre-operational inspections

Performance Criteria

- | | |
|---------|---|
| 7.01.01 | perform walk-around inspection of machine to locate damage |
| 7.01.02 | inspect engine compartment |
| 7.01.03 | inspect operator's station |
| 7.01.04 | check controls |
| 7.01.05 | turn on unit inspect gauges and alarms |
| 7.01.06 | cycle controls for operation |
| 7.01.07 | conduct warm-up procedures and recheck gauges |
| 7.01.08 | conduct brake check |
| 7.01.09 | complete documentation and report |

Range of Variables

damage: unusual wear, leakage, dents, cracks, broken welds, underinflated tires, broken track components

engine compartment: fluid levels (engine oil, hydraulic oil, coolant), belts, hoses, debris build-up, air intake system and exhaust system

operator station: seat belt, safety equipment (horn, backup alarm and lights, fire suppression system), first aid kit, cleanliness (loose tools), loose debris and alternate escape routes

controls: transmission and hydraulic lockouts

B-7.02 Performs post-operational inspections

Performance Criteria

- 7.02.01 park equipment in **service position**
- 7.02.02 perform **shut-down procedures**
- 7.02.03 inspect and organize operator's station
- 7.02.04 perform **walk-around inspection**
- 7.02.05 complete documentation and report

Range of Variables

shut down procedures: idle engine down, allow engine to cool, secure equipment (park/neutral, zero energy attachments), de-energize machine, shut off master switch

service position: flat, level surface, machine is accessible and clear from obstacles

walk-around inspection: wear, cracks and leakage, loose fasteners

TASK B-8 Performs maintenance procedures

Task Descriptor

Forestry equipment operators maintain machine readiness by cleaning and organizing the operator station and ensuring components inside the cab function smoothly. They service drive train systems, wheels, tracks, and related parts through adjustments, cleaning, greasing, and routine care. Preventative maintenance includes managing fluids, filters, fasteners, hoses while following established service schedules and documenting all work. Operators also inspect and maintain attachments, perform minor repairs, and confirm repairs are completed safely and effectively.

B-8.01 Maintains operator station

Performance Criteria

- 8.01.01 clean cab interior
- 8.01.02 secure loose items
- 8.01.03 clean windows and mirrors
- 8.01.04 make adjustments to individual ergonomics
- 8.01.05 lubricate **cab components**

Range of Variables

cab components: throttle pedal, door hinges and seat, safety latches

B-8.02 Maintains drive train systems, tires, rims and tracks

Performance Criteria

- 8.02.01 adjust tire pressure
- 8.02.02 adjust track tension
- 8.02.03 torque wheel nuts
- 8.02.04 grease **drive train components**
- 8.02.05 clean tracks and rollers
- 8.02.06 maintains wheel chains

Range of Variables

drive train components: drive shaft, joints, bogies

B-8.03 Performs preventative maintenance

Performance Criteria

- 8.03.01 verify maintenance schedule
- 8.03.02 change and top up fluids
- 8.03.03 check and grease **components**
- 8.03.04 change and clean **filters**
- 8.03.05 check and tighten **fasteners**
- 8.03.06 inspect and maintain hoses
- 8.03.07 wash and degrease machine
- 8.03.08 completes documentation and report

Range of Variables

components: bearings, fittings, pins, bushings

filters: air, cab, oil, fuel, hydraulic

fasteners: clamps, brackets, bolts, nuts

B-8.04 Performs basic maintenance of attachments

Performance Criteria

- 8.04.01 visually inspect **attachments** and components
- 8.04.02 grease **attachments**
- 8.04.03 sharpen delimiting knives (harvester only)
- 8.04.04 change and rotate bars and chains (harvester only)
- 8.04.05 check and verify torque of fasteners

- 8.04.01 visually inspect **attachments** and components
- 8.04.06 top up chain oil (harvester only)

Range of Variables

attachments: harvester head, forwarder grapple

B-8.05 Performs minor repairs

Performance Criteria

- 8.05.01 assess **minor repair** to be preformed
- 8.05.02 determine repair method
- 8.05.03 position and secure machine
- 8.05.04 **prepare machine** for the repair
- 8.05.05 select tools and materials
- 8.05.06 perform repair
- 8.05.07 verify repair upon completion
- 8.05.08 clean area
- 8.05.09 document repair

Range of Variables

minor repair: replace hydraulic hoses, replace saw bar, replace grease zerks, replace lights

prepare machine: lock out, verify zero energy state, ensure access to repair area

MAJOR WORK ACTIVITY C

Forestry Equipment Operator Tasks

TASK C-9 Performs basic functions

Task Descriptor

This task involves smooth operation of equipment, effective set-up of machine for task at hand, and monitoring of equipment performance. It also covers emergency procedures.

C-9.01 Maintains control of equipment

Performance Criteria

- 9.01.01 enter and exit machine
- 9.01.02 adjust seat and controls
- 9.01.03 adjust gears, throttle and speed according to **conditions**
- 9.01.04 continually manipulate controls for smooth operation
- 9.01.05 maintain centre of gravity while manoeuvring equipment
- 9.01.06 maintain prescribed clearance between equipment, obstacles and utilities

Range of Variables

Conditions: grade and roughness of terrain, wet areas

C-9.02 Manages equipment performance

Performance Criteria

- 9.02.01 scan **gauges and screens**.
- 9.02.02 identify audible alerts
- 9.02.03 identify and interpret fault codes
- 9.02.04 identify **potential signs** of equipment failure
- 9.02.05 identify and evaluate **equipment problems**
- 9.02.06 report and document equipment issues

Range of Variables

gauges and screens: fuel, temperature, oil pressure, warning messages

potential signs: vibration, smoke, odour, unusual sounds

equipment problems: fluid leaks, power loss

C-9.03 Performs emergency procedures

Performance Criteria

- | | |
|---------|--|
| 9.03.01 | assess emergency situation |
| 9.03.02 | determine course of action |
| 9.03.03 | initiate established Emergency Response Plan |
| 9.03.04 | inform supervisor and co-workers of hazard |

Range of Variables

course of action: stop equipment, lower attachments, lock-out machine, perform engine shut-down, perform egress, evacuate area, alert emergency services

TASK C-10 Transports equipment

Task Descriptor

This task involves the mobilization and demobilization of equipment. Forestry Equipment Operators prepare machines for transport by inspecting and configuring equipment. They load equipment by identifying hazards, positioning the machine safely on the haul unit and assisting in securing the load. Unloading involves reassessing hazards, removing tie-downs and coverings, inspecting the machine, and safely manoeuvring equipment and attachments off the haul unit.

C-10.01 Prepares equipment for transportation

Performance Criteria

- | | |
|----------|-----------------------------------|
| 10.01.01 | inspect and clean equipment |
| 10.01.02 | configure machine for transport |
| 10.01.03 | secure attachments and components |

Range of Variables

N/A

C-10.02**Loads equipment and attachments for transportation****Performance Criteria**

- 10.02.01 identify **hazards**
- 10.02.02 manoeuvre equipment and attachments onto haul unit
- 10.02.03 position equipment based on the directions of the transport person
- 10.02.04 lower and secure attachments
- 10.02.05 shut down engine and set parking brake

Range of Variables

hazards - overhead power lines, slippery decks, unlevel ground

C-10.03**Assists in securing equipment for transportation****Performance Criteria**

- 10.03.01 help tie down equipment and attachments
- 10.03.02 close, lock and cover windows and doors
- 10.03.03 cover exhaust pipes on stopped engines

Range of Variables

N/A

C-10.04**Unloads equipment and attachments****Performance Criteria**

- 10.04.01 identify **hazards**
- 10.04.02 remove tie-downs
- 10.04.03 remove exhaust coverings
- 10.04.04 perform walk-around inspection
- 10.04.05 manoeuvre equipment off haul unit
- 10.04.06 lift attachments off haul unit

Range of Variables

hazards: overhead power lines, slippery decks and unlevel ground

TASK C-11 Performs harvesting

Task Descriptor

Product harvesting includes the cutting, processing, and assessing of trees according to the harvest plan. The operator plans the tree removal sequence, performs directional felling for safety and efficiency, evaluates log quality, and calibrates the harvester head to ensure accurate cutting and measurement.

C-11.01 Plans harvesting approach

Performance Criteria

- 11.01.01 review **harvest plan**
- 11.01.02 identify boundaries, trails, and hazards
- 11.01.03 assess **site conditions**
- 11.01.04 plan trail system
- 11.01.05 coordinate with other operators

Range of Variables

harvest plan: block map, work order, special conditions, product specs

site conditions: weather, terrain

C-11.02 Performs felling

Performance Criteria

- 11.02.01 determine **tree selection** sequence
- 11.02.02 check for **hazards**
- 11.02.03 position harvester
- 11.02.04 align head and secure tree
- 11.02.05 perform directional felling
- 11.02.06 **process** tree and create brush mat
- 11.02.07 minimize product **contamination** and **damage**
- 11.02.08 position products for forwarding

Range of Variables

tree selection: position, lean, species, size, form, health

hazards: weather, terrain, hung trees, overhead obstacles

process: measure, delimb, buck, merchandise

contamination: dirt, rocks, slash

damage: dents, chips, tears, warps, indentations

C-11.03 Performs quality control

Performance Criteria

- 11.03.01 visually inspect product
- 11.03.02 ensure product meets specifications
- 11.03.03 identify and adapt to defects
- 11.03.04 sort according to **product specifications**
- 11.03.05 monitor **harvest plan requirements**
- 11.03.06 complete documentation

Range of Variables

harvest plan requirements: trail width, stump heights, trail spacing, basal area, rutting, residual tree damage, legacy clumps, buffers

product specifications: lengths, diameters, species, defect allowances, and grade requirements

C-11.04 Calibrates harvester head

Performance Criteria

- 11.04.01 select trees for calibration
- 11.04.02 position harvester for calibration
- 11.04.03 process trees for calibration
- 11.04.04 measure product length and diameter
- 11.04.05 input measurement data
- 11.04.06 save and document calibration settings
- 11.04.07 verify calibration

Range of Variables

N/A

TASK C-12 Performs Product Extraction

Task Descriptor

Product extraction includes the transportation of harvested logs from the cut block to the roadside landing. The operator plans the product extraction sequence, installs and removes temporary forwarding bridges when needed, loads roundwood onto the machine, and performs roadside piling for efficient loading and transport.

C-12.01 Plans product extraction

Performance Criteria

12.01.01	review harvest plan
12.01.02	identify boundaries, trails and hazards
12.01.03	identify sorts and product types
12.01.04	assess site conditions
12.01.05	plans extraction route
12.01.06	plans roadside layout
12.01.07	coordinate with other operators

Range of Variables

harvest plan: block map, work order, special conditions, product specs

site conditions: weather, terrain

hazards: weather, terrain, overhead obstacles

C-12.02 Extracts product

Performance Criteria

12.02.01	assess product to determine loading sequence
12.02.02	position and stabilize forwarder
12.02.03	use grapple to place product on forwarder bunk
12.02.04	position boom and secure grapple
12.02.05	transport product to roadside
12.02.06	coordinate with other operators

Range of Variables

N/A

C-12.03 Unloads product at roadside

Performance Criteria

12.03.01	monitor roadside piling site conditions and hazards
12.03.02	position and stabilize forwarder
12.03.03	unload, sort and pile product
12.03.04	maintain site access
12.03.05	inspect and clean roadside area
12.03.06	coordinate with other operators

Range of Variables

hazards: people, traffic, utilities, water courses, culverts, fueling stations

pile product: maintain safe height, ensure stability, ensure truck access

operators: forwarder, loader, truck drivers

C-12.04 Uses temporary forwarding bridges

Performance Criteria

- | | |
|----------|---|
| 12.04.01 | assess crossing site |
| 12.04.02 | prepare crossing site |
| 12.04.03 | select and inspect bridge components |
| 12.04.04 | install bridge components |
| 12.04.05 | verify stability and alignment of structure |
| 12.04.06 | remove bridge components upon completion |
| 12.04.07 | restore site |

Range of Variables

bridge components: sill logs, textiles, stringers, brush mats

APPENDIX A: ACRONYMS

BA	Basal Area
CMS	computer monitoring system
CO	Carbon monoxide
CPR	cardiopulmonary resuscitation
CTL	Cut to Length
ERP	emergency response plan
DEF	Diesel Exhaust Fluid
FOPS	falling objects protective structure
GPS	Global Positioning System
HAZMAT	Hazardous materials
JHA	Job hazard analysis
JSA	Job safety analysis
NFPA	National Fire Protection Association
NIOSH	National Institute of Safety and Hygiene
OH&S	Occupational health and safety
OMM	operation and maintenance manual
OSHA	Occupational Safety and Health Administration
PDS	Product data sheet
PMH	Productive machine hour
PPE	Personal protective equipment
PPM	Parts per million
PSI	Pounds per square inch
RMZ	Riparian Management Zone
ROPS	roll overprotective structure
SCBA	self-contained breathing apparatus
SDS	Safety data sheet
SMH	Scheduled machine hour
TDG	Transportation of dangerous goods
WHMIS	Workplace hazardous materials information system
WHSR	workplace health and safety regulations

APPENDIX B: TOOLS AND EQUIPMENT

Hand and Power Tools and Accessories

adjustable wrenches	pliers
air compressors	pressure washers
battery chargers	pry bars
booster cables	pumps (water, discharge, fire)
brooms	ratchet straps
chain saws	scrapers
circular saws	screwdrivers
cold chisels	skid tanks
combination wrenches	socket sets
cutting torches	squeegees
drills (electric and cordless)	slip tank
extension cords	tiger torch
fuel transfer pump	tire inflation tools
generator	tire pressure gauges
grease guns (manual, electric and cordless)	toolboxes
grinders (electric and cordless)	torque wrenches
hack saws	track shovels
hammers (ball peen, claw, sledge)	trouble lights
hydraulic jacks	welder
impact wrenches	wire brushes
load binders and chains	whisk brooms
oil cans	wood blockings
oil filter wrenches	

Measuring, Testing and Diagnostic Equipment

antifreeze testers	multimeter
battery testers	oil sample kits
calibers	slope meters
compass	string boxes
global positioning system (GPS)	test lights
measuring tapes	

Rigging Equipment

come-alongs	ratchet binders
hold down chains	shackles
hooks	slings
lever binders	

Personal Protective Equipment (PPE) and Safety Equipment

coveralls	forestry fire nozzle
ear plugs and muffs	first aid kits
eye wash stations	gloves
face shields	hard hats
fall arrest systems	reflectors
fire shovels	safety boots
fire backtanks	safety glasses
fire blankets	safety pants
fire extinguishers	safety vests
fire pump	spill kits
forestry fire hose	travel alarms

APPENDIX C: GLOSSARY

attachment	an accessory attached or designed to be attached to a machine
cycle time	time it takes to accomplish a task such as felling and processing one tree or the time it takes the forwarder to make one round trip
falling objects protective structure (FOPS)	heavy duty structure for protection of the machine operator from falling objects. Usually has four posts and a strong roof
floatation mats	device, usually made of wood, used to help machinery travel over soft ground
riparian zone	areas that surround water bodies in the watershed that are composed of moist to saturated soils, water-loving plant species and their associated ecosystems
roll overprotective structure (ROPS)	roll bar or similar device to help protect the driver in case the machine tips over