# Electrical Technician and Technologist
# Occupational Standards



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## About the Electricity Sector Council

Approximately 100,000 Canadians are involved in the generation, transmission and distribution of one of our country's essential utilities: electricity. Their work powers homes and businesses across the country, fuelling everything from light bulbs, cell phones and refrigerators to water treatment plants and road vehicle assembly lines.

The Electricity Sector Council provides support to this dedicated team by working with industry employers and other stakeholders to research and resolve human resource and workplace development issues.

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# Electrical Technician and Technologist
## Occupational Analysis Profile

**Disclaimer: Please note that some of the tasks detailed in this document will require the services of a registered trades-person depending upon the province of work. Provincial regulations change from time to time, employers and employees should consult your provincial appropriate licensing authority for clarification regarding which tasks may be affected. It is the responsibility of the individual employer/employee to ensure they act within the regulation for their jurisdiction.**

| | | A.1 | A.2 | A.3 | A.4 | A.5 | A.6 |
|---|---|---|---|---|---|---|---|
| A | Protect Worker Safety, Public Safety and the Environment | Use appropriate personal protective equipment | Apply appropriate safety procedures and standard shop practices | Comply with regulatory requirements and corporate policies | Protect the public from potential hazards | Develop and present public safety information | Follow environmental regulations, policies and procedures |
| | | A.7 | A.8 | | | | |
| | | Develop, implement and maintain emergency and environmental response plans | Monitor and test emergency and environmental response plans | | | | |

| | | B.1 | B.2 | B.3 | B.4 | B.5 | B.6 |
|---|---|---|---|---|---|---|---|
| B | Install and Commission Electrical Equipment | Use and maintain tools and equipment | Install and commission transformers | Install and commission breakers | Install and commission automatic circuit reclosers (ACRs) | Install and commission disconnect switches and circuit switchers | Install and commission relaying equipment |
| | | B.7 | B.8 | B.9 | B.10 | B.11 | B.12 |
| | | Install and commission metering equipment | Install and commission DC systems | Install and commission low-voltage (750 volts and under) AC systems | Install and commission control and monitoring systems | Install and commission rotating machines | Install and commission capacitor banks |

| B.13 | B.14 | B.15 | B.16 | B.17 |
|---|---|---|---|---|
| Install and commission bus work and support structures | Install and commission power lines and underground cables | Commission substations | Install and commission grounding systems | Install and commission corporate facilities |

**C Maintain and Overhaul Electrical Equipment**

| C.1 | C.2 | C.3 | C.4 | C.5 | C.6 |
|---|---|---|---|---|---|
| Maintain transformers | Maintain breakers | Maintain automatic circuit reclosers (ACRs) | Maintain disconnect switches and circuit switchers | Calibrate and maintain relaying equipment | Maintain metering equipment |

| C.7 | C.8 | C.9 | C.10 | C.11 | C.12 |
|---|---|---|---|---|---|
| Maintain DC systems | Maintain low-voltage (750 volts and under) AC systems | Maintain rotating machines | Maintain capacitor banks | Maintain power lines and underground cables | Maintain substations |

| C.13 | C.14 | C.15 | C.16 |
|---|---|---|---|
| Maintain bus work and support structures | Maintain grounding systems | Maintain corporate facilities | Set up and operate test equipment |

**D Operate Electrical Systems**

| D.1 | D.2 | D.3 | D.4 |
|---|---|---|---|
| Analyze system requirements | Perform switching | Apply grounds to isolated power lines and equipment | Operate standby power systems |

| | | E.1 | E.2 | E.3 | E.4 | E.5 | E.6 |
|---|---|---|---|---|---|---|---|
| E | **Troubleshoot and Restore Electrical and Support Systems** | Troubleshoot and repair electrical circuits and equipment | Use specialized test equipment | Analyze, program and troubleshoot digital logic circuits | Modify electrical parts, assemblies and systems | Assist in troubleshooting communications networks | Troubleshoot and repair rotating electrical machines |

| E.7 |
|---|
| Troubleshoot and repair power lines and underground cables |

| | | F.1 | F.2 | F.3 | F.4 | F.5 | F.6 |
|---|---|---|---|---|---|---|---|
| F | **Analyze and Interpret Information** | Analyze and interpret drawings | Create and revise drawings | Analyze and interpret test information | Create recommendations from analysis | Analyze and interpret load profiles | Analyze and interpret codes, policies and manuals |

| | | G.1 | G.2 | G.3 | G.4 | G.5 | G.6 |
|---|---|---|---|---|---|---|---|
| G | **Design and Manage Projects** | Design electrical circuits and equipment | Design electrical systems | Prepare project cost and work-time estimates | Specify and purchase electrical equipment, components and systems | Plan, direct and manage projects | Conduct site preparation |

| G.7 | G.8 | G.9 |
|---|---|---|
| Conduct quality control and assurance procedures and testing | Create commissioning and maintenance procedures | Establish/update inventory records and documentation systems |

| | | H.1 | H.2 | H.3 | H.4 | H.5 |
|---|---|---|---|---|---|---|
| H | **Perform Professional and Administrative Duties** | Follow a code of ethics | Follow relevant regulations, standards and procedures | Mentor and train | Provide technical assistance | Prepare written documentation |

| | | I.1 | I.2 | I.3 | I.4 | I.5 | I.6 |
|---|---|---|---|---|---|---|---|
| I | **Communicate** | Listen | Communicate at appropriate level | Follow proper communication etiquette | Use electronic communication tools | Interact with internal and external stakeholders | Use presentation equipment |

| | | J.1 | J.2 | J.3 | J.4 | J.5 | J.6 |
|---|---|---|---|---|---|---|---|
| J | **Develop Personal Competencies** | Take responsibility for own actions and decisions | Maintain physical and mental well-being | Solve problems and make decisions | Develop personal learning plan | Manage the use of time and other resources | Adapt to new situations and demands |

| J.7 | J.8 | J.9 | J.10 |
|---|---|---|---|
| Work as a member of a team | Use computers | Maintain qualifications and certifications | Demonstrate mechanical aptitude |

## Area of Competence A: Protect Worker Safety, Public Safety and the Environment

**Task A.1:** Use appropriate personal protective equipment

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Select equipment appropriate to the task | • e.g., choose hard hats, safety glasses, approved safety boots, rubber gloves, fall arrest and restraint, fire-retardant clothing following regulatory/corporate safety and rulebook requirements |
| b) Inspect PPE before use | |
| c) Keep inspection records | |
| d) Tag and turn in defective equipment | |

**Task A.2:** Apply appropriate safety procedures and standard shop practices

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Use work protection systems | • e.g., use lockout/tag out systems, card systems |
| b) Develop and use a job safety plan | • Use job safety plan for every job |
| c) Follow corporate safety rules and other regulations | • e.g., refer to Safety Rulebook, grounding procedures and traffic safety planning |
| d) Recognize, isolate and report unsafe conditions | • Report unsafe conditions with equipment and unsafe acts by co-workers |
| e) Participate in safety orientation and training | • Understand job safety requirements<br>• Apply safety rules and procedures as per location or task |
| f) Attend and participate in safety meetings | • e.g., discuss changes in policies and processes, near-miss situations, etc.<br>• Actively participate in discussions<br>• Support open and honest dialogue |
| g) Support activities of safety program | • e.g., support safety inspectors and personnel |

**Task A.3:** Comply with regulatory requirements and corporate policies

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Comply with regulatory agencies | • e.g., NERC, FERC, etc. |
| b) Actively participate in training activities | • e.g., review Occupational Health and Safety Act; WHMIS training; Transportation of Dangerous Goods (TDG); Electrical Utility Safety Association (EUSA) activities, confined space training, bucket rescues, work permit training, grounding and bonding code, risk management, job planning |
| c) Participate in joint health and safety committee meetings | • e.g., meet with appropriate safety committees, if required |
| d) Follow accident reporting procedures | • e.g., environmental and physical accidents<br>• Initiate procedure and meet submission deadlines |
| e) Maintain qualifications and certifications | • e.g., craning, rigging, scaffolding, bucket trucks, lift trucks, driver's licence, trade licences, technical certification, etc. |

**Task A.4:** Protect the public from potential hazards

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Educate the public | • e.g., inform about signs, guards and fences<br>• Present information to school children<br>• Promote safety programs |
| b) Meet or exceed construction safety standards | • e.g., review policies for construction of corporate infrastructure |
| c) Inspect facilities for safety hazards and security | • e.g., inspect barricades, broken grounds, low clearances |
| d) Perform public inspections | • e.g., monitor house/building moves under wires and lines |
| e) Supply line location services | • e.g., identify hidden lines for customers |

**Task A.5:** Develop and present public safety information

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Collect safety presentation material | • e.g., gather pamphlets and information sheets |
| b) Develop presentations | • Create PowerPoint slides |
| c) Establish audience requirements | • Review audience requirements for groups of firefighters, police, public |
| d) Deliver presentation professionally | • Meet the requirements of the audience |
| e) Respond to questions | |

**Task A.6:** Follow environmental regulations, policies and procedures

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) File reports | • Include proper information and keep for the proper legislated timeframe |
| b) Follow set procedures | • e.g., provincial and/or federal requirements such as WHMIS (Workplace Hazardous Materials Information System) and MSDS (Material Safety Data Sheets)<br>• Report who, what, when and where |
| c) Complete inspections and investigations | • e.g., after spills and incidents occur |
| d) Identify and correct environmental hazards | • e.g., identify oil leaks and monitor for SF6 gas |
| e) Participate in environmental training | • Attend refresher courses on topics like species at risk<br>• Support and maintain environmental awareness training program<br>• Review environmental topics at safety meetings |
| f) Evaluate environmental impact of tasks and projects | • e.g., be aware of and reduce the effect of various chemicals, energies, or actions on the environment |
| g) File reports with regulatory authorities | • e.g., file notices of projects and notices of work with appropriate authority |
| h) Conduct sampling | • e.g., conduct soil sampling |

**Task A.7:** Develop, implement and maintain emergency and environmental response plans

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Participate in the development of environmental response plans | • Understand legislation and environmental impact |
| b) Participate in emergency response training | • e.g., attend spill response training, scenarios training, containment equipment orientations<br>• Access emergency preparedness and response procedures |
| c) Ensure equipment is available and in working order | • Assess containment equipment, kits in company vehicles |

**Task A.8:** Monitor and test emergency and environmental response plans

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Review emergency response plans | • e.g., conduct quarterly/semi-annual reviews |
| b) Participate in testing of emergency response plans | • Access emergency preparedness and response procedures<br>• Communicate with outside services e.g., EMS, police |
| c) Understand personal role and responsibility within emergency response plan | |

## Area of Competence B: Install and Commission Electrical Equipment

**Task B.1:** Use and maintain tools and equipment

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Use hand tools | • Use insulated hand tools when required (e.g., control panels) |
| b) Use power tools | • e.g., drills, saws (e.g., jigsaws, reciprocating saws) |
| c) Use test equipment | • e.g., for conducting AC or DC voltage checks, continuity checks |
| d) Use survey equipment | • e.g., for staking power lines, setting levels in sub-stations |
| e) Use powder actuated tools | • Ensure proper training for safe operation |
| f) Use bucket trucks and other lift trucks | • Ensure proper training and/or licensing |
| g) Inspect and replace damaged tools | |

**Task B.2:** Install and commission transformers

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Complete acceptance testing prior to installation | • e.g., test for shorts and review benchmark readings |
| b) Rig and crane to place in operating position and assemble | |
| c) Complete oil processing, vacuum filling and sampling | • Ensure oil reaches required levels and meets dielectric standards |
| d) Complete visual inspections | |
| e) Function test all components | • Test gauges, tap changers and alarms |
| f) Complete commissioning tests | • Test winding resistance, high-voltage, resistance, ratiometer, capacitance bridge, partial discharge testing |
| g) Complete load testing | • While transformer is energized |
| h) Perform system phasing check | |
| i) Document and file test results | • File reports with authorities |
| j) Function test auxiliary equipment | • e.g., gauges, alarms, tap changers, gas relay |
| k) Repair as required | |
| l) Complete documentation and filing | • Follow appropriate filing practices<br>• Note deficiencies |

**Task B.3:** Install and commission breakers

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Complete acceptance testing prior to installation | • e.g., test for shorts and review benchmark readings |
| b) Rig and crane to place in operating position and assemble | • Fill breakers with insulating medium, as required |
| c) Complete installation testing | • e.g., dewpoint testing, timing tests and analyze contacts, insulation testing<br>• Conduct gas analysis and oil analysis<br>• Send samples to lab for analysis |
| d) Complete internal inspections | • e.g., confined space inspections |
| e) Function test auxiliary equipment | • e.g., pressure switches, density monitors, alarms |
| f) Repair as required | • e.g., touch up paint, failed components |
| g) Complete documentation and filing | • Follow appropriate filing practices<br>• Note deficiencies |

**Task B.4:** Install and commission automatic circuit reclosers (ACRs)

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Complete acceptance testing prior to installation | • e.g., test for shorts and review benchmark readings |
| b) Rig and crane to place in operating position and assemble | |
| c) Complete installation setup and testing | • Use recloser testing equipment<br>• Configure settings and test operations<br>• e.g., timing tests, analyze contacts, insulation testing<br>• Send samples to lab for analysis, |
| d) Complete internal inspections | |
| e) Function test auxiliary equipment | • e.g., AC source, batteries |
| f) Repair as required | • e.g., touch up paint, wiring modifications |
| g) Complete documentation and filing | • Follow appropriate filing practices<br>• Note deficiencies |

**Task B.5:** Install and commission disconnect switches and circuit switchers

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Complete visual inspections | • Identify switch types, for example, single-phase switches, manual operated/motor operated switches |
| b) Rig and crane to place in operating position and assemble | |
| c) Complete acceptance testing prior to installation | |
| d) Inspect and set up control box for motor operated switches | |
| e) Complete installation testing | • Identify alignment, set up limit switches |
| f) Function-test disconnect switches | |
| g) Repair and replace, as required | |
| h) Complete documentation and filing | • Follow appropriate filing practices<br>• Note deficiencies |

**Task B.6:** Install and commission relaying equipment

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Validate relay | • Bench test relays |
| b) Install relays | • Complete wiring connections according to schematics/cable schedules |
| c) Input settings | |
| d) Verify equipment settings | • Test relay timing |
| e) Function test relay schemes | • Perform trip testing on relay protection schemes<br>• Test for coordination with other devices |
| f) Repair and replace as required | |
| g) Complete documentation and filing | • Follow appropriate filing practices<br>• Note deficiencies |

**Task B.7:** Install and commission metering equipment

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Complete visual inspections | |
| b) Complete shop testing prior to installation | • Repair and replace, as required |
| c) Calibrate meters | |
| d) Test remote communications | • Identify wireless, fibre-optic, powerline carrier communications |
| e) Test instrument transformers | |
| f) Complete load testing | • File reports with regulatory authorities |
| g) Calibrate and test voltage and current transducers | |
| h) Function test all components | |
| i) Complete installation testing | |
| j) Verify meter accuracy | |
| k) Document and file testing results | • Register serial number with regulatory authorities |
| l) Complete documentation and filing | • Follow appropriate filing practices<br>• Note deficiencies |

**Task B.8:** Install and commission DC systems

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Ensure battery room meets standards | • e.g., lighting, ventilation, etc. |
| b) Conduct visual inspections | |
| c) Complete acceptance testing prior to installation | |
| d) Install and connect cells for batteries | |
| e) Perform battery testing | • e.g., conductance or resistance testing, load testing<br>• Complete voltage readings and specific gravity |
| f) Install chargers and complete function testing | • Use scopemeters to determine DC output ripple<br>• Set parameters |
| g) Install inverters and complete function testing | • Use scopemeters to determine DC output ripple<br>• Set parameters |
| h) Install UPS (uninterruptible power supplies) breaker transfer systems and complete function testing | • Complete micro-ohm testing on contactors |
| i) Install distribution panels and complete function testing | |
| j) Conduct alarm testing | • e.g., DC system alarms, fire alarms, charger fail alarms |
| k) Document and file testing results | |
| l) Repair and replace as required | |
| m) Complete documentation and filing | |

**Task B.9:** Install and commission low-voltage (750 volts and under) AC systems

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Complete acceptance testing prior to installation | |
| b) Install breaker transfer systems and complete function testing | • Complete micro-ohm testing |
| c) Install distribution panels and complete function testing | |
| d) Install streetlight systems and sub-station yard-lighting | |
| e) Conduct alarm testing | • Verify equipment alarms |
| f) Document and file testing results | |
| g) Install and commission standby generators | |

**Task B.10:** Install and commission control and monitoring systems

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Test field controls | |
| b) Install and commission microprocessor based control systems, (PLC) | |
| c) Install and commission electromechanical control systems | |
| d) Install and commission end devices | • Flow, movement, pressure, speed, temperature, weight, vibration, voltage, and watt |
| e) Install and commission fire systems | • Deluge, sprinkler, portable extinguishers, detection devices, |
| f) Read and interpret electrical drawings | |
| g) Analyze and troubleshoot dry air systems | • e.g., troubleshoot computer-based systems |
| h) Communicate with control systems | • e.g., communicate with SCADA systems, Remote Transmitting Unit (RTU), Digital Analog Controllers (DACs) |

**Task B.11:** Install and commission rotating machines

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Install and commission generators and synchronous condensers | • Apply knowledge of exciters, governors, commutators, brushes and brush gear, slip rings<br>• Check brush tolerances<br>• Sand-in new brushes properly |
| b) Install and commission motors | • Apply knowledge of magnetic brakes and clutches, variable frequency drives, DC drives, bearings, brushes, etc. |
| c) Determine test procedures for rotating electrical machines | |
| d) Conduct electrical testing | • Conduct high potential testing, insulation testing |
| e) Repair and replace as required | |
| f) Complete documentation and filing | |

**Task B.12:** Install and commission capacitor banks

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Complete acceptance testing prior to installation | |
| b) Rig and crane into position and assemble | |
| c) Verify de-energized and discharged | |
| d) Perform capacitor and auxiliary equipment testing | • Use megger, capacitance bridge |
| e) Conduct visual inspections | |
| f) Balance capacitor banks | |
| g) Complete documentation and filing | |

**Task B.13:** Install and commission bus work and support structures

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Perform initial inspections of bus work | • Review engineering specs<br>• Complete visual inspections<br>• Identify torque settings<br>• Check expansion joints<br>• Install animal protection and barriers |
| b) Complete connection testing | • e.g., complete micro-ohm, hi-pot testing |
| c) Perform initial inspections of support structures | • e.g., inspect lattice structures, box structures, wood pole structures |
| d) Repair and replace as required | |
| e) Complete documentation and filing | |

**Task B.14:** Install and commission power lines and underground cables

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Generate technical justifications | • Develop needs analysis, technical and financial risk assessments |
| b) Submit financial request and secure funding | • Create financial work orders, capital and maintenance investment requests |
| c) Create and design assemblies | • Use safety and corporate standards |
| d) Stake out lines | • Measure/stake poles and anchor locations |
| e) Secure power line tenure | • Negotiate/obtain easements, access permission, and encroachment permits |
| f) Mark out rights-of-way widths | • Measure/stake easement and forestry limits |
| g) Complete appropriate permits | • Arrange to have long-lead items available in advance, underground utility locates, municipal consents/approvals |
| h) Generate material lists | • e.g., record what was installed against what was designed |
| i) Create tenant documentation | • Update/set up joint use tenant permits |
| j) Create “as-builts” | |
| k) Complete material and framing checks | |
| l) Check clearances | • Use sonic elevation meters, laser distance meters, transits |
| m) Check guying and anchoring | |
| n) Check grounding | |
| o) Perform electrical testing on cable systems | |
| p) Complete housekeeping duties | • Ensure no tools and materials are left behind |
| q) Complete documentation and filing | |

**Task B.15:** Commission substations

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Conduct site preparation | |
| b) Ensure soil testing is complete | |
| c) Verify drawing represents finished substation | |
| d) Inspect area security | |
| e) Complete contract-monitoring tasks | |
| f) Inspect oil containment system | • e.g., holding tanks, oil/water separator, etc. |
| g) Ensure appropriate nomenclature is present | |
| h) Complete site inspections | • e.g., review vegetation encroachment, inspect fences |
| i) Complete building/switchyard inspections | |
| j) Correct any issues | |
| k) Complete documentation and filing | |

**Task B.16:** Install and commission grounding systems

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Complete ground resistivity tests | |
| b) Verify drawing represents finished grounding systems | |
| c) Inspect ground grid connections | • e.g., inspect equipment end connections.<br>• Ensure proper cable sizes<br>• Inspect fence and equipment grounding |
| d) Ensure proper gravel specification has been met | |
| e) Conduct ground and ground rod testing | • Use megger |
| f) Repair and replace as required | |
| g) Complete documentation and filing | |

**Task B.17:** Install and commission corporate facilities

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Ensure building services are installed correctly and functioning properly | • e.g., heating, lighting and ventilation |
| b) Complete facility inspections | • e.g., animal abatement |
| c) Verify drawing represents finished facility | |
| d) Ensure inspection by proper authority | • e.g., by safety code officials |
| e) File certificates of approval (COAs) | • e.g., file with Ministry of Environment or other officials |
| f) Repair and replace as required | • e.g., repair and replace emergency lights |
| g) Complete documentation and filing | |

## Area of Competence C: Maintain and Overhaul Electrical Equipment

**Task C.1:** Maintain transformers

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Follow company maintenance schedules | |
| b) Complete gas and oil analysis | • As required |
| c) Perform tests on auxiliary equipment | • e.g., gauges, alarms, tap changers, gas relay |
| d) Conduct testing | • e.g., visual inspection, infra-red testing, high-voltage tests, winding resistance, ratiometer, capacitance bridge |
| e) Repair as required | |
| f) Complete documentation and filing | |

**Task C.2:** Maintain breakers

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Complete internal inspections | • e.g., visual inspection, take measurements, assess contact condition, confined space inspection |
| b) Recharge breakers as required | • Re-fill oil and gas as required |
| c) Conduct testing | • e.g., complete timing check, micro-ohm check, gas and oil analysis, dynamic resistance measurements (DRMs), visual inspection, infra-red testing, high-voltage (for High Voltage breakers) |
| d) Repair as required | |
| e) Complete documentation and filing | |

**Task C.3:** Maintain automatic circuit reclosers (ACRs)

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Conduct routine testing | • e.g., conduct internal inspections, infra-red testing, oil sampling,<br>• Follow time-based inspection cycles |
| b) Test recloser control | • Conduct inspections of auxiliary power system, including battery |
| c) Repair and replace as required | |
| d) Complete documentation and filing | |

**Task C.4:** Maintain disconnect switches and circuit switchers

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Conduct routine testing | • e.g., conduct visual inspections, infra-red testing, check insulators, check contact resistance, timing tests (High Voltage) |
| b) Take current readings | • e.g., of motors and cabinet heaters |
| c) Clean and lubricate disconnect switches | |
| d) Function test disconnect switches | |
| e) Repair and replace as required | |
| f) Complete documentation and filing | |

**Task C.5:** Calibrate and maintain relaying equipment

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Verify equipment settings | |
| b) Conduct relay testing | • Inspect according to time-based cycles and testing authorities |
| c) Function test equipment | • Ensure equipment is in test position<br>• Perform trip testing on relay protection schemes<br>• Restore device for service |
| d) Repair and replace as required | |
| e) Complete documentation and filing | |

**Task C.6:** Maintain metering equipment

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Perform meter audits | • Complete verification of customer meters<br>• Follow time-based inspection cycles |
| b) Test instrument transformers | • Ensure accuracy<br>• High voltage testing |
| c) Repair and replace as required | |
| d) Complete documentation and filing | |

**Task C.7:** Maintain DC systems

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Conduct visual inspections | |
| b) Conduct routine testing | • e.g., conduct specific gravity checks, voltage checks, conductance testing, check chargers, test alarms, scope tests, inspect breaker |
| c) Complete load testing | |
| d) Test alarms and control systems | |
| e) Complete function testing | |
| f) Repair and replace as required | |
| g) Complete documentation and filing | |

**Task C.8:** Maintain low-voltage (750 volts and under) AC systems

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Conduct visual inspections | |
| b) Conduct routine testing | • e.g., conduct voltage checks, test alarms, inspect breakers |
| c) Inspect lighting systems | • e.g., inspect street lights, switch yard station lights |
| d) Complete function testing | |
| e) Repair and replace as required | |
| f) Complete documentation and filing | |

**Task C.9:** Maintain rotating machines

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Conduct visual inspection | |
| b) Conduct maintenance of generators and synchronous condensers | • Apply knowledge of exciters, governors, commutators, brushes and brush gear, slip rings<br>• Check brush tolerances<br>• Sand-in new brushes properly |
| c) Conduct maintenance of electric motors | • Lubricate bearings and bushings, replace brushes |
| d) Determine maintenance procedures for rotating electrical machines | |
| e) Conduct electrical testing | • Conduct high potential testing, insulation testing |
| f) Repair as required | |
| g) Complete documentation and filing | • Revise drawings |

**Task C.10:** Maintain capacitor banks

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Conduct visual inspections | |
| b) Ensure de-energized and discharged | |
| c) Conduct electrical testing | • e.g., capacitance DF testing, infra-red testing, insulation testing, high potential testing |
| d) Test field controls | |
| e) Test alarms and tripping schemes | |
| f) Balance capacitor banks | |
| g) Complete documentation and filing | |

**Task C.11:** Maintain power lines and underground cables

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Conduct visual inspections | • e,g., underground cable oil reservoir levels |
| b) Conduct condition assessments | • e.g., check for damage to assemblies, animal-related damage, conductor damage, lightning damage, chipped insulators, vegetation encroachments, right-of-way changes (logging trails), change in condition of structures |
| c) Conduct electrical testing | • e.g., fault location, high-voltage testing (hi-pot and power factor testing), auxiliary equipment testing |
| d) Comply with inspection documentation | • e.g., adhere to regulatory policies |
| e) Repair and replace, as required | • e.g., cable splicing, line clearing, re-stringing lines |
| f) Complete documentation and filing | |

**Task C.12:** Maintain substations

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Complete site inspections | • e.g., review vegetation encroachment, inspect fences |
| b) Complete building/switchyard inspections | • e.g., inspect structures within buildings |
| c) Identify or correct any issues | • e.g., missing ground conductors, cuts in fencing |
| d) Complete documentation and filing | |

**Task C.13:** Maintain bus work and support structures

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Conduct visual inspection | • e.g., check insulators |
| b) Conduct routine testing | • e.g., conduct infra-red tests, check for loose connections on support structures |
| c) Maintain insulators and structures | • e.g., galvanizing, checking steelworks, conducting contamination testing, washing |
| d) Identify or correct any issues | |
| e) Complete documentation and filing | |

**Task C.14:** Maintain grounding systems

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Conduct ground inspections | • Use megger to complete grounding inspection |
| b) Conduct ground testing | • Use ground resistance meter |
| c) Correct any issues | |
| d) Complete documentation and filing | |

**Task C.15:** Maintain corporate facilities

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Complete facility inspections | • e.g., inspect fire detection/suppression systems<br>• Ensure lighting and HVAC are maintained |
| b) Ensure inspection by proper authority | |
| c) Correct any issues | • e.g., repair and replace emergency lights |
| d) Complete inspection reports | |
| e) Complete documentation and filing | • e.g., drawings, emergency plans, test procedures |

**Task C.16:** Set up and operate test equipment

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Interface from laptop to test equipment (if applicable) | • Use proper software related to test equipment |
| b) Complete training for new equipment | • e.g., review equipment manuals, maintain training requirements |
| c) Confirm equipment meets standards | • e.g., check used/rented equipment, leased equipment<br>• Check for calibration |
| d) Maintain and update equipment inventory | • Establish and follow calibration cycle |

## Area of Competence D: Operate Electrical Systems

**Task D.1:** Analyze system requirements

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Calculate loading | • Properly use instruments to calculate loading |
| b) Determine fusing or relay settings | • Determine fuse or relay trip levels |
| c) Determine conductor and equipment current carrying capability | • Read prints |

**Task D.2:** Perform switching

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Develop switching plan | • Coordinate switching with system control centre and/or other substations<br>• Keep aware of emergency restoration procedures<br>• Calculate load currents<br>• Read and interpret single line diagrams |
| b) Adhere to lock out-tag out procedures (work protection code) | • Use hold cards, interlock systems, etc. |
| c) Wear appropriate personal protective equipment | • Use rubber gloves, arc flash gear, hotstick, etc.<br>• Inspect and maintain high voltage switching sticks and gloves |
| d) Operate breakers, disconnects, circuit switchers | • Block automatic transfer equipment and reclosing equipment |
| e) Recognize and work within safe limits of approach | • Follow CSA/corporate standards |

**Task D.3:** Apply grounds to isolated power lines and equipment

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Ensure switching procedures have been followed | • e.g., isolate under work permit |
| b) Follow high voltage testing procedures | • Use potential testing devices |
| c) Follow proper grounding procedures | • Knowledge of available fault currents<br>• Select appropriate size of grounds<br>• Wear appropriate personal protective equipment<br>• Work within limits of approach |
| d) Operate grounding disconnects | • Use of interlock systems |

**Task D.4:** Operate standby power systems

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Maintain standby generators | • e.g., diesel, propane, natural gas |
| b) Synchronize generator to electrical system | • e.g., maintain synchronizing equipment |

## Area of Competence E: Troubleshoot and Restore Electrical and Support Systems

**Task E.1:** Troubleshoot and repair electrical circuits and equipment

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Identify the issue/trouble | • Obtain/apply troubleshooting training and techniques |
| b) Establish troubleshooting plan | • Conduct tailboard conference |
| c) Review documents/prints | • Review appropriate procedures |
| d) Complete appropriate testing | |
| e) Solve technical problems | • Perform mathematical operations and graphical functions |
| f) Repair and replace electrical circuits and equipment | • Tag equipment if unable to repair<br>• Use soldering tools and equipment |
| g) Revise documentation | • Update prints, if required |
| h) Complete reports | • Submit to appropriate group |

**Task E.2:** Use specialized test equipment

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Determine appropriate equipment for the job | • Use splicing equipment, specialized locating equipment, thermography equipment, high potential testers, power quality analyzers, relay test sets, ultrasonic testers, circuit breaker analyzers<br>• Confirm equipment meets standards (e.g., check used/rented equipment, leased equipment) |
| b) Participate in training activities for specialized test equipment | |
| c) Engage external contractors | • e.g., equipment specialists, engineers, etc. |

**Task E.3:** Analyze, program and troubleshoot digital logic circuits

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Analyze and troubleshoot logic systems | • e.g., troubleshoot computer-based systems (i.e., dry air systems, relay systems) |
| b) Interface/communicate with control systems | • e.g., communicate with SCADA systems, Remote Transmitting Unit (RTU), Digital Analog Controllers (DACs), ACR controllers |
| c) Follow program flow and logic to determine problems | |
| d) Modify programs with appropriate approval | • Save copy of latest program |

**Task E.4:** Modify electrical parts, assemblies and systems

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Identify what needs to be modified | |
| b) Seek approval for modification | • e.g., engineer's approval<br>• Check for manufacturers' bulletins |
| c) Identify safety impacts | |
| d) Determine physical and electrical clearances | • e.g., limits of approach |
| e) Re-test equipment after modifications | |
| f) Document and report modifications | • e.g., complete trending reports and file reports with authority, update switch log, modify prints |

**Task E.5:** Assist in troubleshooting communications networks

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Assist in modifying equipment according to communication demands | • e.g., complete testing<br>• Add alarms and other security<br>• Re-label wiring and connections |
| b) Use specialized equipment to troubleshoot communication | • e.g., use while testing multiplex circuits, dB testing (acoustics) |
| c) Upgrade software and firmware as required | |

**Task E.6:** Troubleshoot and repair rotating electrical machines

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Determine test procedures for rotating electrical machines | |
| b) Perform emergency repairs as required | • e.g., brush gear, rotor and stator, excitor and governor, auxiliary equipment |
| c) Test alarms and control systems | |
| d) Update documentation and revise drawings | |

**Task E.7:** Troubleshoot and repair power lines and underground cables

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Complete visual inspection/patrol | • e.g., to identify faults |
| b) Perform specialized tests | • e.g., fault locating |
| c) Repair as required | • e.g., cable splicing, line clearing, re-stringing lines |
| d) Restore line into service | |
| e) Complete documentation and filing | • Submit to appropriate group<br>• Update drawings |

## Area of Competence F: Analyze and Interpret Information

**Task F.1:** Analyze and interpret drawings

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Verify drawings are accurate and correct | • Review current versions and past revisions<br>• Travel to field to verify drawings |
| b) Locate equipment in drawings | • Identify drawing types, for example, paper-based and computer-based copies of single-line drawings, schematic drawings, connection diagrams, cable schedules |
| c) Determine isolation points for work protection | |
| d) Follow systems operation | |
| e) Interpret legends and symbols on drawings | • Use knowledge of accepted symbols, abbreviations, and NEMA numbers |

**Task F.2:** Create and revise drawings

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Field-mark revisions and changes for approval | |
| b) Follow issuance and removal procedures for drawings | • Sign out drawings by employee<br>• Ensure former versions are removed from filing system |
| c) Update drawings to match as-built | • Redraw on paper or using CAD or AMFM program |
| d) File drawings appropriately | |

**Task F.3:** Analyze and interpret test information

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Compare information to manufacturer standards and previous test results (benchmarks) | • Look for changes and conduct trending functions |
| b) Conduct re-tests as required | |
| c) File test data | • File in databases |
| d) Generate maintenance requests | • e.g., create electronic forms, tabular information entries |

**Task F.4:** Create recommendations from analysis

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Write clear and concise recommendations | • e.g., maintenance requests |
| b) Forward test results and supporting information to authorities | • e.g., ask for manufacturers'/other experts' advice |
| c) Use personal expertise to make recommendations | |

**Task F.5:** Analyze and interpret load profiles

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Gather loading information | • e.g., review metering/system records |
| b) Analyze data and assess impact on grid | • e.g., fuse coordination |
| c) Provide solutions | |

**Task F.6:** Analyze and interpret codes, policies, and manuals

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Interpret and apply specifications, standards, and codes | • e.g., electrical, fire, building codes and specs |
| b) Interpret policies | • e.g., company policies |
| c) Interpret manuals | • e.g., manufacturer's manuals |

## Area of Competence G: Design and Manage Projects

**Task G.1:** Design electrical circuits and equipment

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Design electrical circuits and equipment to required standards | • e.g., modify prints and other documents<br>• Re-design circuits to reflect changes<br>• Build to electrical code and/or company adopted standards, if applicable |
| b) Recommend changes to equipment | • e.g., submit justification to engineers for approval |

**Task G.2:** Design electrical systems

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Create and design assemblies | |
| b) Create an engineered drawing package | • Check clearances, guying and anchoring, and grounding<br>• Complete housekeeping duties<br>• Complete documentation and filing<br>• Complete material and framing checks |
| c) Review designs and prints of network tie-points | • e.g., review solar and wind tie-points in transmission and distribution<br>• Update designs and prints |
| d) Generate material lists | • e.g., record what was installed against what was designed<br>• RFQ process<br>• Arrange to have long-lead items available in advance |
| e) Identify and apply for appropriate permits | • e.g., encroachment and easement permits |
| f) Review design prior to implementation | |

**Task G.3:** Prepare project cost and work-time estimates

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Estimate project cost and schedule | • Use MS Project and work management systems |
| b) Identify project participants | • Participants may include contracted companies, stakeholders, etc. |
| c) Prepare tender documents | • Be familiar with contract law |
| d) Follow contract law | • Understand requirements for Health and Safety |

**Task G.4:** Specify and purchase electrical equipment, components and systems

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Determine purchasing requirements | • e.g., follow procurement policies<br>• Use procurement software (e.g., SAP)<br>• Use company credit cards |
| b) Determine specifications | • Determine equipment requirements<br>• Review approved material policies |
| c) Determine selection methods | • Follow procurement policies<br>• Select materials from approved vendors |
| d) Adhere to contracts | • Arrange delivery of materials<br>• Arrange payment |
| e) Establish acceptance test procedures | |

**Task G.5:** Plan, direct and manage projects

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Develop and/or review scope of work | |
| b) Determine resource requirements | • e.g., determine human resources requirements and physical resource requirements<br>• Identify need for internal and external resources |
| c) Determine schedules | • e.g., schedule work, delivery |
| d) Review project documentation | • e.g., review contracts, permits |
| e) Provide regular status reports | • e.g., provide cost analysis reports and progress reports as required |
| f) Close out project | • e.g., meet with contractors |
| g) File documentation | |

**Task G.6:** Conduct site preparation

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Identify location and acquire property | |
| b) Conduct environmental assessment | • Inspect oil containment equipment<br>• Ensure soil testing is complete<br>• Follow regulatory guidelines |
| c) Conduct public consultation process | |
| d) Complete ground resistivity tests | |
| e) Create civil drawing package | |
| f) Inspect fencing and secure area | • e.g., assign policing<br>• Access and egress control<br>• Identify limits of construction site |
| g) Complete contract-monitoring tasks | • e.g., foundations, fencing, building etc |
| h) Ensure appropriate nomenclature is present | |

**Task G.7:** Conduct quality control and assurance procedures and testing

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Determine applicable quality control standards | • Follow testing workflows and IEEE standards |
| b) Conduct crew visits and audits | • e.g., to ensure processes and procedures are being followed |
| c) Request and incorporate feedback to improve processes | • Make comments for improvement on processes and procedures when necessary |
| d) Create documentation and file | |

**Task G.8:** Create commissioning and maintenance procedures

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Determine commissioning requirements | • Review manufacturers' manuals, documentation and specifications<br>• Consult technical experts |
| b) Develop flowchart | • Organize information chronologically in logical progression |
| c) Use company format, if applicable | • Write intuitive and technical procedures |
| d) Test your procedures before administration | • Use test group |

**Task G.9:** Establish/update inventory records and documentation systems

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Establish/update equipment identification system | • Use labelling, bar codes, SKU numbers as required |
| b) Establish/update inventory control procedures | |
| c) Establish/update contracts with manufacturers | |
| d) Establish/update inventory quantities | • Use computer-based inventory programs (e.g., SAP) |

## Area of Competence H: Perform Professional and Administrative Duties

**Task H.1:** Follow a code of ethics

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Follow codes of ethics of professional organizations | • Follow processes for ethical decision-making |
| b) Follow corporate codes of conduct | |
| c) Follow governmental codes of conduct | • e.g., the Transmission Code, Distribution Code and Electricity Act; connection agreements |

**Task H.2:** Follow relevant regulations, standards and procedures

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Follow governmental standards | • e.g., CSA standards; Canadian Labour Code; Canadian Electrical Code, Occupational Health and Safety Act |
| b) Follow corporate standards | • Review relevant company bulletins; corporate safety regulations and directives, and other documents as required |
| c) Follow utility codes | • e.g., codes from Northeast Power Coordinating Council (NPCC); North American Electric Reliability Corporation (NERC); Independent Electricity System Operator (IESO) |

**Task H.3:** Mentor and train

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Provide on-the-job instruction to new and inexperienced workers | • Offer step-by-step instruction |
| b) Identify personal training needs and of other workers | |
| c) Conduct orientations | • Conduct safety orientations, facility orientations |
| d) Participate in mentorship program | |
| e) Support occupational development | |

**Task H.4:** Provide technical assistance

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Research problems | |
| b) Provide field support | • Give support that is appropriate to the audience |
| c) Provide customer support | • Give support that is appropriate to the audience |
| d) Identify and confirm requests for assistance | |
| e) Ensure understanding and follow up | |

**Task H.5:** Prepare written documentation

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Follow reporting and documentation procedures | • Use reporting formats and templates |
| b) Compile information | |
| c) Write concise and understandable documentation | • Use proper grammar and spelling<br>• Employ technical writing skills as required |
| d) Forward documentation to appropriate individuals | |
| e) File documentation according to guidelines | |

## Area of Competence I: Communicate

**Task I.1:** Listen

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Focus on topic | |
| b) Be prepared on subject material | |
| c) Verify understanding by confirming and clarifying | |

**Task I.2:** Communicate at appropriate level

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Know your audience | • e.g., speak to a range of people from customers with limited technical knowledge to engineers with vast technical understanding |
| b) Use various communication styles and approaches | |
| c) Express concerns and issues effectively | • Ensure you have addressed all concerns<br>• In both oral and written communication |

**Task I.3:** Follow proper communication etiquette

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Use appropriate language and proper grammar | • Always follow corporate and public standards |
| b) Follow reporting protocol | • Keep immediate supervisor informed<br>• Notify internal representatives before going outside company with any information<br>• Follow company code of conduct for sharing information |

**Task I.4:** Use electronic communication tools

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Use portable computers and laptops | • Store and use computer properly<br>• Use only approved software and devices<br>• Know operating systems and basic programs<br>• Use proper e-mail format and etiquette<br>• Always follow corporate and public standards |
| b) Use hand-held devices | • Be able to key in information from inspections and testing<br>• Upload and download information |
| c) Use telephones, cellular telephones, VHF radios and PDAs | • Be able to send and receive messages<br>• Turn off electronic devices during meetings<br>• Always follow corporate and public standards |
| d) Use digital cameras | • Be able to take pictures and attach pictures as files in e-mail messages |

**Task I.5:** Interact with internal and external stakeholders

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Interact with corporate customers | • Demonstrate professionalism |
| b) Interact with residential customers | • Answer questions at a level they will understand |
| c) Interact with operational staff | • Provide timely data and keep them up to date<br>• Understand common abbreviations |
| d) Interact with other utility customers | • Retain knowledge of the overall system and effects on each utility<br>• Understand common abbreviations |
| e) Interact with generation customers | • Have an understanding of your system how distribution and transmission affects the generation system |
| f) Interact with peers/co-workers | • Respect all levels of employees |
| g) Interact with regulatory agencies | • Be aware of rules and regulations<br>• Understand common abbreviations |
| h) Interact with management | • Verify personal concerns |
| i) Interact with government agencies | • e.g., Ministries of Environment, Labour, and Education<br>• Know rules and regulations which affect your personal rights as an employee and rights of your company |

**Task I.6:** Use presentation equipment

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Use projectors | • Be able to present in a variety of ways to effectively convey your message |
| b) Use presentation software | • e.g, PowerPoint |
| c) Use web conferencing | • e.g., Illuminate, WebEx |

## Area of Competence J: Develop Personal Competencies

**Task J.1:** Take responsibility for own actions and decisions

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Maintain personal safety | • Attend and participate in safety training |
| b) Maintain safety of others | |
| c) Maintain quality of work | |
| d) Apply due diligence | • Follow corporate and jurisdictional policies |
| e) Make informed decisions | • Share experiences with co-workers |
| f) Match personal values to corporate values | • Follow codes of conduct |

**Task J.2:** Maintain physical and mental well-being

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Be physically fit to perform job | • Report limiting factors to your supervisor |
| b) Maintain mental well-being | • Seek professional help if required<br>• Report limiting factors to your supervisor |
| c) Recognize personal limits | • Seek assistance when required |

**Task J.3:** Solve problems and make decisions

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Apply training to analyze situations and answer questions | • e.g., formal training and informal field training |
| b) Research solutions | • Know resource materials |
| c) Make decisions based on facts | |
| d) Support decisions | |
| e) Recognize personal competency levels | • Request assistance when required<br>• Gain confidence from experience |

**Task J.4:** Develop personal learning plan

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Keep technical skills current | • Participate in available training<br>• Keep abreast of changes in technology |
| b) Identify personal development plan | |
| c) Accept and give constructive criticism | |

**Task J.5:** Manage the use of time and other resources

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Apply time management training / knowledge | • Keep supervisor informed of current workload<br>• Set priorities |
| b) Be able to delegate | |

**Task J.6:** Adapt to new situations and demands

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Be willing and open to new situations and demands | |
| b) Maintain positive attitude | |

**Task J.7:** Work as a member of a team

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Recognize the skills and abilities of others | • Accept diversity<br>• Accept leadership role of self and others |
| b) Maintain open communication among team members | |
| c) Accept and give constructive criticism | |
| d) Give credit where credit is due | |

**Task J.8:** Use computers

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Develop computer skills for the job | • Access appropriate software<br>• Develop keyboarding skills |
| b) Use peripheral devices | • e.g., scanner, plotter |
| c) Use communication protocols and hardware | • e.g., select proper cables, Comm Ports, Baud Rates, etc. |
| d) Use the internet and intranet | • e.g., access supplier catalogues, maintanance standards, policies and procedures |

**Task J.9:** Maintain qualifications and certifications

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Participate in upgrading activities | • Volunteer and request upgrade training when necessary<br>• Minimum requirements may be stated in job maintenance and job descriptions |
| b) Maintain education units and credits, if required | |
| c) Support and participate in organizations that support the occupation | |
| d) Maintain First Aid and CPR certifications, if required | |
| e) Maintain trade licenses and professional designation | |

**Task J.10:** Demonstrate mechanical aptitude

| Subtasks: | Supporting knowledge and abilities: |
|---|---|
| a) Use training programs and manuals | • Ask questions<br>• Show interest |
| b) Practice mechanical abilities | • Understand operation of machines and equipment<br>• Use tools and equipment properly |
| c) Achieve operational standards | |
| d) Accept ongoing evaluation and feedback | |

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