

NATIONAL OCCUPATIONAL STANDARD MINERALS PROCESSING OPERATOR



INTRODUCTION

For more information on the NOS and CMCP, please visit www.miningcertification.ca.

National Occupational Standards (NOS) are inventories of the skills and knowledge required for workers to perform proficiently in a particular job or occupation. The mining industry NOS are set at the proficient level, meaning that they list the competencies a fully experienced worker can perform on the job.

In 2006, the Mining Industry Human Resources Council (MiHR) received its initial funding to begin developing a suite of NOS for the Canadian mining sector. The process was led by a stakeholder Steering Committee, which included representatives from various groups, including industry, labour, education, industry associations and different levels of government. To inform the content of each NOS, the Steering Committee recruited subject-matter expert groups, called National Occupational Standard Development Committees (NOSDCs).

Occupational standards serve as the basis for program development in the areas of training and skills assessment. They may also be used to develop other HR tools, such as job descriptions, interview guides and prior learning or foreign credential assessment guides.

The NOS for the mining industry also serve as the foundation for MiHR's Canadian Mining Certification Program (CMCP).

HOW TO READ THE NOS

MiHR has completed a rationalization and standardization of competencies across our suite of National Occupational Standards (NOS) into a single consolidated list. The consolidation of competencies will be of great benefit because it brings consistency to the tasks and competencies that are used to create the suite of NOS. It will improve the effectiveness of each NOS by enabling improved mobility and links to training across multiple occupations within mining and other natural resource sectors.

A key benefit of consolidating the competencies from MiHR's suite of NOS is that the competencies can be transferred across occupations and thus improve mobility of the workforce. The consolidation will also facilitate the alignment and transferability of skills obtained in various training programs based on MiHR's NOS. The consolidated list of competencies allows for a common measuring stick to assess the skills and abilities of workers in the mining industry by enabling an "apples to apples" comparison and will enable employers to focus on training only the knowledge and/or skill gaps for workers that come from other occupations. The targeted training will be more cost effective and less time consuming, which means workers will be on the job with the right skills and training in a shorter period of time. Educators can design training programs to better align to industry needs, thereby increasing the likelihood of their graduates finding work in a related field.

The NOS consist of a number of Areas of Competence. Each Area of Competence is made up of multiple Tasks. Each Task contains one or more Sub-Tasks and References and Examples to provide a deeper context of what the Task includes.

The numbering scheme for the suite of NOS has a numeric list; for example, Area of Competence 6: Energy Sources. Each Task within an Area of Competence is referenced sequentially in a bulleted list. For example, Task 6.1: Work Around Energy Sources is a Task within Area of Competence 6: Energy Sources.

A consolidated list of competencies means that each Area of Competence and related Tasks must keep the same identification number regardless of which NOS in which they are included. As a result, the Area of Competence for Energy Sources will always be 6 and Work Around Energy Sources will always be Task 6.1. This is done to ensure consistency across each NOS and the list of competencies.

Should an NOS not include an Area of Competence or Task, the related details for that Task will not be present in the NOS. For example, if Task 2.7: Work Around Water Hazards is not included in an NOS, then the number sequence will be 2.4, 2.5, 2.6, 2.8, assuming that the 2.4, 2.5, 2.6 and 2.8 are part of the NOS. In its place, there will be an indication that Task 2.7 is not applicable to this NOS. The same would hold true if an Area of Competence is not included in an NOS.

ACKNOWLEDGEMENTS

The Mining Industry Human Resources Council would like to acknowledge the contributions of all participants, past and present, to the development of the National Occupational Standards. For a full list of past participants, please consult our website at www.miningcertification.ca.

2007-2011

National Occupational Standards Steering Committee

National Occupational Standards Development
Committee – Minerals Processing Operator

Other Industry Contributions

2014 (REVIEW YEAR)

National Occupational Standards Development
Committee – Minerals Processing Operator:

Juan Anes, KGHM International

Earl Hirschfeld, Rio Tinto's Diavik Diamond Mine

Roger Ford, Teck Resources Limited's
Highland Valley Copper

Riley Mooney, Nyrstar Myra Falls

Aaron Hutchings, Vale Sudbury

Mike Nolting, Dominion Diamond (Ekati) Corporation

Tad Crowie, RLGM

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AREA OF COMPETENCY 1: **POLICIES AND LEGISLATION**

TASK 1.1 **COMPLY WITH COMPANY POLICIES AND PROCEDURES**

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Understand and follow company policies and procedures

- Comply with updates and revisions to policies and procedures
- Comply with drug and alcohol policy

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Includes Standard Operating Procedures (SOPs)
- Includes policies on the use of personal electronic devices, wearing jewellery, contact lenses, long hair, etc.
- Includes procedures on operation of equipment, use and handling of chemicals, care and maintenance of sumps and ventilation
- Understand and apply human resource policies, procedures and collective bargaining agreements

TASK 1.2 **UNDERSTAND AND COMPLY WITH APPLICABLE WORKPLACE LEGISLATION AND REGULATIONS**

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Understand and follow work processes mandated by legislation and regulations

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Includes Mine Health and Safety Act and Regulations, Workers' Compensation Regulations, Labour Standards, Hoisting Regulations, Environmental legislation
- Comply with updates and revisions to legislation and regulations

AREA OF COMPETENCY 2: **WORK SAFELY**

TASK 2.1 **SELECT, USE, AND MAINTAIN PERSONAL PROTECTIVE EQUIPMENT (PPE)**

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Recognize situations that require use of personal protective equipment (PPE)
2. Select, inspect, use, maintain, and store appropriate PPE for:
 - head protection
 - eye protection
 - foot protection
 - hand protection
 - hearing protection
 - respiratory protection
 - specific conditions (fall protection, welding, radiation, handling chemicals, energized work, roasting)
3. Wear clothing appropriate for work conditions and tasks
4. Practice personal hygiene

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Select appropriate PPE
 - wear PPE approved by recognized authority (Canadian Standards Association (CSA), American National Standards Institute (ANSI), Underwriters Laboratories (UL))
 - identify limitations of PPE
 - workers may not be aware of approved PPE and/or the PPE may be assigned by the company
 - contractors can be required to select their own PPE
 - ensure PPE is appropriate for the assigned work task
- Inspect PPE
 - inspect PPE for wear, damage, and defects before using
 - replace worn, damaged, or defective PPE
 - report defects to appropriate personnel
- Use PPE
 - ensure PPE fits correctly and is adjusted properly
 - follow manufacturer's instructions and specifications for proper use and maintenance of PPE
- Maintain and store PPE
- Wear clothing appropriate for work conditions and tasks
 - do not wear loose or torn clothing
 - ensure all clothing adequately covers body to protect against hazards, contaminants, work and weather elements
 - dispose of contaminated clothing in compliance with company policies and legislation
 - use appropriate eye protection in place of contact lenses
 - wear high visibility PPE as required
- Practice personal hygiene
 - keep work clothes separate from street clothes if required
 - change and clean work clothes regularly

AREA OF COMPETENCY 2: **WORK SAFELY**

TASK 2.2 **PRACTICE GOOD HOUSEKEEPING**

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Maintain clean work area
2. Take corrective action as required
3. Appropriately dispose of waste materials
4. Organize and classify materials

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Maintain clean work area
 - ensure priority areas are clear first as identified in policies and procedures
 - use appropriate equipment for task (e.g. broom, scraper, water hose, vacuum, blow pipe or air lance, mobile equipment)
 - keep work areas free from clutter

- keep work areas free of ice, grease and mud
- clean, maintain and return tools and equipment to storage immediately after use
- report and/or remove defective equipment
- Take corrective action as required
 - clean all spills and/or leaks
 - install signs and barricades as required
 - ensure work area is free of obstructions
- Dispose of waste materials
 - follow environmental plan
- Organize and classify materials
 - use shadow boards for storing equipment
 - use tool cribs, bins and dedicated areas for storing similar materials

TASK 2.3 **IDENTIFY AND RESPOND TO WORKPLACE HAZARDS**

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Recognize hazardous or potentially hazardous conditions
2. Observe safety precautions in hazardous conditions
3. Take corrective action
4. If hazardous conditions cannot be immediately corrected: put up signs, barricade area or post guard, lock out and tag and de-energize
5. Record and report all hazardous or potentially hazardous conditions to appropriate personnel

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Recognize hazardous or potentially hazardous conditions
 - use risk assessment tools as per site policies and procedures
 - types of hazardous conditions may include: dangerous weather and environmental conditions, heat and cold

stress, wildlife, poor ground conditions (loose rock, swamp, ice), overhead hazards (trees, power lines, screen, vent tubing), underground hazards (gas lines, power lines), open holes (sumps, chutes, shafts, trapdoors), protruding objects (nails, anchors), tripping or slipping hazards (hoses, rocks, muck, hoses, ice, lichen, spills), moving equipment (trucks, loaders, forklifts, aircraft), explosives (dangerous gases, e.g. oxy-acetylene, methane, propane, H₂S, HCN, chlorine), inadequate ventilation (ripped or torn vent tubing, non-operating fans), lack of or inadequate safety guards on equipment with moving or rotating parts, energy sources, reagents, engulfment, potential chemical reactions, dust, confined space, flocculants

AREA OF COMPETENCY 2: **WORK SAFELY**

- Take corrective action
 - isolate hazard or potential hazard
 - guard all identified hazards using barricades and signs
 - post guard, if required
 - stop work if there are unsafe conditions
 - complete job hazard analysis
 - evacuate area if necessary
- If hazardous conditions cannot be immediately corrected
 - ensure safety of self and others
 - lock out, tag and de-energize as per site policies and procedures

TASK 2.4 **MANUALLY LIFT AND CARRY MATERIALS**

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Assess the load
2. Inspect pathway and destination
3. Prepare to lift the load
4. Make the lift
5. Carry the load
6. Ground the load

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Assess the load
 - estimate size, weight, centre of gravity and dimensions of load
 - determine if assistance is required
 - determine if mechanical lifting equipment is needed
- Inspect pathway and destination
 - identify and remove hazards, where possible
 - identify resting places, if needed
 - ensure clear path to travel

- Prepare to lift the load
 - work within personal physical limits and limits identified in policies and procedures
 - ensure good footing and well balanced stance
 - select safe and comfortable hand holds
 - grip with full palm of hand
 - use sit down position and keep back straight
- Make the lift
 - ensure back is kept straight, use leg muscles to lift
 - use proper lifting technique to avoid muscular skeletal injuries
- Ground the load
 - keep back straight and use leg muscles to lower load

TASK 2.5 is not applicable to this occupation

AREA OF COMPETENCY 2: **WORK SAFELY**

TASK 2.6 **WORK AROUND MOBILE AND STATIONARY EQUIPMENT**

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Work in authorized locations only
2. Communicate with equipment operator
3. Obey rules of conduct
4. Avoid hazardous conditions

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Obey rules of conduct
 - maintain safe working distance
- Avoid hazardous conditions
 - use designated travel ways around equipment
 - avoid blind spots
 - do not cross guards or barricades
 - recognize and utilize safety bays
 - be aware of trailing cables
 - obey signage and established right of way policies
- Communicate with equipment operator/ skip tender/ cage tender/ dispatch
 - communicate with equipment operator and verify acknowledgement
 - be aware of locations of communications equipment

TASK 2.7 **WORK AROUND WATER HAZARDS**

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Operate equipment safely in and around water hazards
2. Ensure safety of personnel working around water hazards

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Ensure safety of personnel working around water hazards
 - use personal floatation devices (PFDs)
 - monitor water levels
 - adhere to environmental standards
 - perform dam monitoring
- Operate equipment safely in and around water hazards
 - follow legislation and company policies and procedures as outlined
 - collect samples from tailings pond
 - utilize appropriate fall protection
 - use re-claim pumps
 - maintain berms

TASKS 2.8 – 2.11 are not applicable to this occupation

AREA OF COMPETENCY 3: **SIGNS, BARRICADES, TRAFFIC, PLANS AND DRAWINGS**

TASK 3.1 **RECOGNIZE AND COMPLY WITH SIGNAGE, BARRICADES, AUDIBLE ALARMS, AND EQUIPMENT LIGHT INDICATORS**

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Recognize and comply with signage
2. Recognize and comply with barricades
3. Recognize equipment and system audible and visual alarm signals
4. Recognize equipment and system indicator lights
5. Do not alter or remove warning signs, lights, audible alarms or barricades

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Recognize and comply with signage
 - includes informational signs and tags, cautionary and danger signs (e.g. electrical hazard), directional signs, labels (e.g. Workplace Hazardous Materials Information System (WHMIS))

- Recognize and comply with barricades
 - includes cautionary tape, danger/do not enter tape, physical barriers (i.e. berms, concrete stoppers, steel cable) and protective barriers (i.e. snow fence, environmental)
- Recognize equipment and system audible and visual alarm signals
 - includes bells, buzzers, horns, whistles, sirens, shaft signals
 - includes ready lights, fault indicators, emergency indicators
- Recognize equipment and system indicator lights
 - includes shaft warning lights, open hole lights, transportation of explosives, strobe light, equipment audible alarms, blast warning signs and lights, gaseous alarms, equipment start up, mixing alarms, amperes meter, pressure gauges, fault finder alarms

TASK 3.2 **INSTALL, REMOVE, MAINTAIN AND STORE SIGNS AND BARRICADES**

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Select correct sign/barricade for specific application (e.g. unsafe walkway, open hole)
2. Follow site policy and procedure for posting/installing signs and barricades
3. Maintain and store signs and barricades in proper locations

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- No additional references or examples

AREA OF COMPETENCY 3: **SIGNS, BARRICADES, TRAFFIC, PLANS AND DRAWINGS**

TASK 3.3 **RECOGNIZE AND COMPLY WITH TRAFFIC SIGNS, LIGHTS AND PATTERNS**

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Recognize traffic signs and lights
2. Comply with traffic rules and patterns

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Comply with traffic rules and patterns
 - includes: traffic lights, restricted traffic area, right of way, right and left hand drive areas, emergency vehicle movement
 - follow site policies and procedures (e.g. call-in protocols, ramp protocols, designated parking)
- Recognize traffic signs and lights
 - includes: traffic signs, blasting signs, directional signs, restricted area sign

TASK 3.4 is not applicable to this occupation

AREA OF COMPETENCY 4: FIRE SAFETY

TASK 4.1 BE PREPARED TO RESPOND TO FIRES

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Classify fires by hazard
2. Know location of fire extinguishers and fire hoses
3. Demonstrate knowledge of components and use of fire extinguishers
4. Inspect fire extinguishers
5. Report all discharged or defective fire extinguishers to appropriate personnel
6. Demonstrate knowledge of equipment fire suppression system
7. Know location of emergency evacuation / in-evacuation / muster points
8. Knowledge of location of fire suppression activation points

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Classify fires by hazard
 - rubber, compressor rooms, electrical, grease, oil, equipment, chemical, concentrate
- Demonstrate knowledge of components and use of fire extinguishers
 - identify classes of fires: A - paper, wood, trash; B - flammable liquids, lubricants, paints; C - electrical; D - combustible metals
 - recognize potential for explosion (e.g. equipment fire, tire fire)
 - identify standard types, sizes and applications of fire extinguishers
 - identify names and functions of principal components of fire extinguishers
 - identify ranges and limitations of fire extinguishers
 - understand safety precautions for fire extinguishers, including CO₂ hazards due to misuse
- Demonstrate knowledge of equipment fire suppression system
 - activate fire suppression system
 - ability to dismount safely after activation if needed

TASK 4.2 EXTINGUISH MINOR FIRES, IF SAFE TO DO SO

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Report all fires and discharged or defective fire extinguishers to appropriate personnel
2. Know location of emergency evacuation / in-evacuation / muster points
3. Select and use appropriate fire extinguisher and/or suppression equipment
4. Use proper fire extinguishing techniques

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- No additional references or examples

AREA OF COMPETENCY 4: FIRE SAFETY

TASK 4.3 FIRE PREVENTION

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Properly store combustible materials
2. Proper maintenance of equipment
3. Control sources of flame / ignition
4. Safely operate open flame equipment

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Properly store combustible materials
 - combustible wastes in covered bins or other designated containers
 - oily rags, oil, empty grease tubes, waste paper, coal, sulphide, wood and timber
- Proper maintenance of equipment
 - ensure fire suppression is intact
 - portable fire extinguisher working properly
 - clean grease build up
 - clean diesel filters
 - don't overfill fluid levels
- Control sources of flame / ignition
 - cigarettes, sparks, electrical discharges, friction, foreign material near exhaust, open flame
- Safely operate open-flame equipment
 - includes: acetylene torch, tiger torch, coil torch, diesel heater and stove
 - follow manufacturer's instructions for use (e.g. use for intended purpose only, follow lighting and extinguishing procedures, follow re-fueling procedures, adhere to maintenance procedures and inspections)
 - have appropriate class of fire extinguisher available

AREA OF COMPETENCY 5: EMERGENCY SITUATIONS

TASK 5.1 PREPARE FOR EMERGENCY SITUATIONS

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Know the locations of emergency evacuation / in-evacuation / muster points
2. Know the locations of fire extinguishers, hoses, equipment
3. Know the location of first aid kits and first aid station
4. Know the location of and how to use eye wash stations, emergency showers, Material Safety Data Sheets (MSDS), respiratory protection (e.g. self-contained breathing apparatus (SCBA), self-rescuer), gas detectors
5. Know the location of emergency tents, escape way locations, routes and markings, refuge stations
6. Know the location of equipment emergency stop devices
7. Know the location of spill kits
8. Know the emergency procedures

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Know the location of equipment emergency stop devices
 - e.g. pull cord on conveyors, fuel shut offs, positive air shut offs
- Know the emergency procedures
 - e.g. alarm procedure, communication protocol and emergency response
 - emergency contact number, appropriate radio channel to report emergency

TASK 5.2 COMPLY WITH WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEMS (WHMIS)

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Identify hazard symbol classifications
2. Access, understand and follow MSDS instructions
3. Maintain WHMIS certification

- Access, understand and follow MSDS instructions
 - knowledge of location of further instructions and key contact personnel

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Identify hazard symbol classifications
 - hazard symbols include: Class A: compressed gas, Class B: flammable and combustible material, Class C: oxidizing material, Class D: poisonous and infectious material, Class E: corrosive material, Class F: dangerously reactive materials

TASK 5.3 is not applicable to this occupation

AREA OF COMPETENCY 5: **EMERGENCY SITUATIONS**

TASK 5.4 **RESPOND TO AND REPORT EMERGENCIES**

Importance: Very Important

Frequency: Rarely

SUB-TASK:

1. Respond to all emergencies
2. Report all incidents/emergencies
3. Secure incident/emergency site

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Respond to all emergencies
 - e.g. fire, medical, chemical, equipment, environmental (in-rush of water, major falls of ground, rush of muck, inadvertent stops, stray bells, dogging, high water shaft bottom, power failure)
 - stay calm and assess situation
 - interpret alarms and other indicators to determine type of emergency and need for evacuation
 - activate emergency protocol, release stench gas (if applicable)
 - follow emergency response plan
 - evacuate if necessary
 - follow safest escape route
 - if unable to reach refuge station, barricade self in safe location, ensuring supply of air
 - await further instructions
 - follow instructions of designated emergency personnel
- Report and document all emergencies and incidents
 - complete all required reports and forms
 - report emergency or incident to appropriate personnel according to policies and procedures
- Secure incident/emergency site
 - secure and freeze the scene
 - warn others
 - activate alarms
 - follow communication protocols
 - take corrective action if appropriate (e.g. emergency shutdown procedure)

AREA OF COMPETENCY 6: ENERGY SOURCES

TASK 6.1 WORK AROUND ENERGY SOURCES

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Recognize energy sources, stored and potential
2. Recognize when equipment is locked out and tagged and de-energized

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Recognize energy sources, stored and potential
 - mechanical, hydraulic, kinetic, potential, pneumatic, electrical, thermal, chemical, nuclear

TASK 6.2 LOCK OUT, TAG AND DE-ENERGIZE EQUIPMENT

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Lock out equipment for repair or maintenance as per site policies and applicable regulations
2. Tag equipment for repair or maintenance as per site policies and applicable regulations
3. De-energize equipment and verify zero energy state for repair or maintenance

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Lock out equipment for repair or maintenance as per site policies and applicable regulations
 - de-energize equipment
 - ensure safety of self and others
 - ensure safety of equipment
 - identify types of locks including personal locks, enclosures, multi-locks, lock boxes
- Lock out and tag for commissioning and testing as per site policies and procedures
- Electrically powered equipment
 - isolate power supply by: disconnecting switch, shutting off breaker, using isolation bar/scissor locks, locking out equipment correctly, attaching required lock to isolation bar/scissor lock, ensuring appropriate key storage and handling
- Mechanical equipment
 - lock out by: ensuring that no material can enter equipment being repaired/maintained, shutting down process as required, shutting off valve nearest flange to be blanked, draining, purging, depressurizing or flushing lines before repair/maintenance to ensure that stored energy is dissipated or contained, locking out valves using chain lock where applicable
- Tag equipment for repair or maintenance as per site policies and applicable regulations
 - identify types of tags, the colours and their use
 - complete all required information on tag
 - record lock out
 - inform appropriate personnel of equipment lock out
- De-energize equipment and verify zero energy state for repair or maintenance
 - ensure zero energy state (ZES) for equipment (e.g. local and remote bump test)

AREA OF COMPETENCY 7: **WORKING AT HEIGHTS**

TASK 7.1 **IDENTIFY, INSPECT AND STORE FALL PROTECTION SYSTEMS**

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Identify types of fall protection systems
2. Select suitable fall protection system to match task
3. Inspect, maintain and store fall protection systems
4. Report and remove defective fall protection systems
5. Complete fall protection training

- Inspect, maintain and store fall protection systems
 - identify damaged or defective fall protection systems including loose or broken handrails or guard rails
 - defective systems should be taken out of service
 - store fall protection systems properly to prevent damage
- Report and remove defective fall protection systems
 - complete required documentation
 - report deficiencies to supervisor

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Identify types of fall protection systems
 - hand rails, guard rails, travel restraint, fall arrest, anchor points

TASK 7.2 **USE PERSONAL FALL ARREST SYSTEM**

Importance: Very Important

Frequency: Weekly

SUB-TASK:

1. Receive (certified) training for use of fall arrest system
2. Inspect fall arrest system
3. Ensure fall arrest system fits properly
4. Maintain and store fall arrest system
5. Use fall arrest system as per applicable legislation and site policies and procedures
6. Have and understand rescue plan

- Use fall arrest system as per applicable legislation and site policies and procedures
 - working from heights (scaffold, scissor lift), open holes
- Have and understand rescue plan
 - properly retrieve fallen worker
 - time limitations

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Ensure fall arrest system fits properly
 - select proper size, position on body, use of trauma straps and adjust correctly
 - follow manufacturer's specifications for use

AREA OF COMPETENCY 7: **WORKING AT HEIGHTS**

TASK 7.3 **USE PORTABLE LADDERS**

Importance: Very Important

Frequency: Rarely

SUB-TASK:

1. Identify types, sizes and grades of ladders
2. Check condition of ladder
3. Erect ladder
4. Ascend and descend ladder
5. Perform tasks on ladder
6. Inspect, clean and store ladder

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Identify types, sizes and grades of ladders
 - extension ladders, step ladders
 - made of different materials: metal, fibreglass, wood
 - different grades of ladders: Grade III, Grade II, Grade I, Industrial
 - select ladder appropriate for task and conditions
- Check condition of ladder
 - inspect ladder for faulty rungs or rails before, during and upon completion of job
 - tag out, remove or repair ladder, if needed
- Erect ladder
 - place feet of ladder on level surface
 - physically secure ladder
 - ensure proper angle of repose as per site policies and procedures
- Ascend and descend ladder
 - climb facing ladder
 - use three-point contact
 - wear fall arrest system, as required
 - use assisted stabilization where required
- Perform tasks on ladder
 - work facing ladder and maintain contact with hand, whenever possible
 - maintain required distance from top of ladder
 - transport materials in suitable container using a rope
 - reposition ladder to prevent overreaching
- Inspect, clean and store ladder
 - record and report defect / damage to supervisor

TASK 7.4 **WORK ON SCAFFOLDS AND RAISED PLATFORMS**

Importance: Very Important

Frequency: Rarely

SUB-TASK:

1. Ascend and descend scaffold or raised platform
2. Perform work on scaffold or raised platform

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Ascend and descend scaffold or raised platform
 - ensure scaffold has been signed off by certified assembler and is current
 - ensure necessary guards are in place
 - use three-point contact
 - wear fall arrest system, as required
- Perform work on scaffold or raised platform
 - identify any defects or damage
 - record and report defect/damage to supervisor
 - shut down raised platform if defective
 - fasten fall arrest system to appropriate anchorage point at or above shoulder
- Raised platforms include scissor lifts and aerial boom lifts
 - limited to working from raised platform and does not include operation of the equipment

AREA OF COMPETENCY 8: **COMMUNICATE**

TASK 8.1 **LISTEN ACTIVELY**

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Pay attention to person giving the message
2. Ask person to repeat information if not understood completely
3. Confirm information by repeating or rephrasing

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Pay attention to person giving the message
 - reduce surrounding noises by stopping equipment and tools or moving away from noise
 - allow speaker to finish message before responding

TASK 8.2 **SPEAK CLEARLY AND CONCISELY**

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Give clear and concise directions
2. Use common language and terminology of work site
3. Confirm understanding

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Give clear and concise directions
 - organize your thoughts before speaking
 - use appropriate volume and tone of voice
 - use appropriate body language
 - use sketches as required to assist in understanding
- Confirm understanding
 - ask questions to make sure directions were understood

AREA OF COMPETENCY 8: **COMMUNICATE**

TASK 8.3 **USE COMMUNICATION DEVICES**

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Familiarize self with equipment
2. Know how to use equipment
3. Conduct pre-operational check
4. Use proper communication etiquette

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Familiarize self with equipment
 - includes two-way radios, telephones, bells, pager phones, public address systems, CB radios, dispatch system (e.g. Modular, WENCO)
 - use only authorized communication systems
- Conduct pre-operational check
 - for two-way radios and pager phones (prepare radio, ensure battery is fully charged, test radio)
- Use proper communication etiquette
 - use appropriate radio channels, language, and codes
 - avoid unnecessary chatter
 - maintain radio silence as appropriate
 - reduce background noise such as satellite radio
- Follow control room protocol

TASK 8.4 **CONVEY MESSAGE USING SIGNALS**

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Ensure visual contact
2. Use appropriate signals for the task

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Ensure visual contact
 - take signals from one person only
- Use appropriate signals for the task
 - includes visual signals (hand, light) and audible signals (horns, bells, and whistles)
 - includes signals for lifting devices (cranes, cage, skip), tramming, conveyance, aircraft and helicopters

AREA OF COMPETENCY 8: **COMMUNICATE**

TASK 8.5 **USE WORKPLACE TECHNOLOGIES**

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Use computer based training modules
2. Read and understand machine parameters
3. Receive and follow dispatch instructions
4. Use computer software

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Use computer based training modules
 - interactive computer program, simulators
- Read and understand machine parameters
 - electronic warning cluster, warning lights and audible alarms, computer screens
 - includes heavy equipment status monitoring screens, in-plant diagrams, on-line references (MSDS pages, SOPs)
- Receive and follow dispatch instructions
 - dispatch screen (e.g. Modular, WENCO, Mine Star)
- Use computer software
 - electronic forms, databases, Internet, e-mail, word processors, spreadsheets

TASK 8.6 **COMPLETE WORKPLACE DOCUMENTATION**

Importance: Important
Frequency: Daily

SUB-TASK:

1. Use appropriate form
2. Write legibly
3. Be specific
4. Use correct terminology
5. Submit or file as required

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Use appropriate form
 - includes inspection checklists, log-books, shift reports, production reports, incident reports, safety system cards, time cards
- Be specific
 - include accurate information, appropriate details, and complete report in full

AREA OF COMPETENCY 8: **COMMUNICATE**

TASK 8.7 **COACH OR MENTOR OTHER EMPLOYEES**

Importance: Important
Frequency: Daily

SUB-TASK:

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

1. Demonstrate proper technique
2. Check for understanding
3. Observe employee
4. Provide assistance and feedback

- No additional references or examples

TASK 8.8 is not applicable to this occupation

AREA OF COMPETENCY 9: BE PROFESSIONAL

TASK 9.1 **WORK IN A TEAM ENVIRONMENT**

Importance: Important

Frequency: Daily

SUB-TASK:

1. Respect team members
2. Respect each other
3. Be professional

- Respect each other
 - be tolerant of others
 - be willing to learn from others: be willing to mentor others
- Be professional
 - understand requirements for the job
 - show up to work on time
 - demonstrate a strong work ethic
 - understand chain of command
 - follow, model, and promote safety and legislative requirements

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Respect team members
 - accommodate each other's communication needs (language differences)
 - cooperate with each other (need to be able to trust one another and rely upon each other)

TASK 9.2 **WORK IN A CULTURALLY DIVERSE ENVIRONMENT**

Importance: Important

Frequency: Daily

SUB-TASK:

1. Respect practices of co-workers and local populations
2. Respect social differences

- Respect social differences
 - show interest in others (ask about work experience, family)
 - be a role model for others

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Respect practices of co-workers and local populations
 - be open-minded

TASKS 9.3 & 9.4 are not applicable to this occupation

AREA OF COMPETENCY 10: EQUIPMENT KNOWLEDGE

TASK 10.1 DEMONSTRATE EQUIPMENT KNOWLEDGE

Importance: Important

Frequency: Daily

SUB-TASK:

1. Trained and authorized for proper use and operation of equipment
2. Inspect equipment for defects, hazards and potential hazards
3. Conduct pre-operational checks
4. Properly mount and dismount equipment
5. Start equipment
6. Conduct operational checks
7. Drive equipment to worksite, as required
8. Shut down equipment (normal situations)
9. Shut down equipment (emergency situations)
10. Conduct post-operational check
11. Knowledge of refueling procedure

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Trained and authorized for proper use and operation of equipment
 - follow manufacturer's recommended procedures
 - follow safe operating procedures
 - know capabilities and limitations of equipment
- Inspect equipment for defects, hazards and potential hazards
 - identify and assess severity of equipment defects
 - take corrective action to restore normal vehicle operation
 - record defect and corrective action taken in log-book
- Conduct pre-operational checks
 - damage to equipment
 - steering
 - test brakes
 - tires and undercarriage
 - fire suppression and extinguishers
 - bolts keepers and holders
 - oil spills and/or excessive grease
 - pinions and ball gears
- Start equipment
 - rope windows
 - inspect layout of hoist
 - conveyance inspections
 - test all forms of communication – radio, bells, phones, pager phones
 - mechanical, electrical and HMI
- Properly mount and dismount equipment
 - use three-point contact
 - use grab handles and handrails
- Start equipment
 - neutralize controls (transmission, control levers)
 - activate power supply (master switch)
 - use warning signal before start-up
 - activate ignition
- Conduct operational checks
 - read and countersign log-book
 - fill out pre-operational check sheet
 - check gauges and alert indicators
 - ensure air and oil are at required levels
 - listen for unusual noises (engine, power train)
 - check brakes and steering are functional
 - check warning systems and lights are operating
 - hoist testing (trial run, brake tests, conveyance checks, cage and skip checks)
 - test hoist limits of travel – overwind, underwind, track limit
- Drive equipment to worksite, as required
 - wear seat belts
 - use appropriate warning lights and signals
 - test service and emergency brakes
 - follow designated travel routes
 - observe speed limit, traffic signs, traffic patterns and rights-of-way
 - adjust speed according to road and weather conditions
 - listen for unusual noises (engine, power train)

AREA OF COMPETENCY 10: EQUIPMENT KNOWLEDGE

- Operate equipment
 - wear seatbelts
 - use appropriate warning lights and signals
 - test service and emergency brakes
 - follow designate travel routes
 - adjust speed according to road and weather conditions
 - listen for unusual noises (engine, power train)
 - to maximize efficiency and ensure safety of other personnel and equipment
 - assess material and site conditions to determine appropriate operating techniques and speeds
 - monitor ammeter
- Shut down equipment (normal situations)
 - park in designated areas
 - set parking/emergency brake
 - shut off ignition and/or fuel supply
 - shut off master switch
 - set wheel chocks
 - lock out and tag as required
- Shut down equipment (emergency situations)
 - recognize and respond to alarms
 - shut down as prescribed for type of hazard
 - set off fire suppression system, as required
 - report incident to appropriate personnel
- Conduct post-operational walk-around check
 - fill out log-book

TASK 10.2 WORKING WITH EQUIPMENT

Importance: Important
Frequency: Daily

SUB-TASK:

1. Use appropriate personal protective equipment
2. Be cautious around moving parts of equipment
3. Identify potential pedestrian and traffic interaction
4. Avoid hazardous conditions
5. Demonstrate knowledge of working in vicinity of explosives

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Be cautious around moving parts of equipment
 - avoid pinch points
 - ensure appropriate guards are in place
 - stay clear of moving pulleys and belts

- Avoid hazardous conditions
 - identify blind spots
 - use designated travel ways
 - check for power, telephone and cable lines, guy wires and fences, low clearance areas
 - avoid debris resulting from work or movement of equipment

AREA OF COMPETENCY 11 IS NOT APPLICABLE TO THIS OCCUPATION

AREA OF COMPETENCY 12: OPERATE SUPPORT EQUIPMENT

TASK 12.1 OPERATE LIGHT OR SERVICE VEHICLE

Importance: Important

Frequency: Daily

SUB-TASK:

1. Demonstrate equipment knowledge
2. Load, transport and unload materials, supplies and/or personnel

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Load, transport and unload materials, supplies and/or personnel
 - ensure protection of self and others
 - ensure non-movement of vehicle while loading
 - observe load limitations
 - secure seats, safety bars and chains
 - ensure proper hook-up of carrier
 - secure loads

TASKS 12.2 – 12.13 are not applicable to this occupation

TASK 12.14 OPERATE SKID STEER

Importance: Important

Frequency: Daily

SUB-TASK:

1. Demonstrate equipment knowledge
2. Load and unload materials/supplies

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge
 - raising and lowering, tilting and tipping bucket
 - loading and balancing within limitations of bucket and machine
 - safely carrying load on grades

AREA OF COMPETENCY 12: OPERATE SUPPORT EQUIPMENT

TASK 12.15 OPERATE FORKLIFT

Importance: Important

Frequency: Daily

SUB-TASK:

1. Demonstrate equipment knowledge
2. Transport materials and equipment
3. Unload materials and equipment

- position forks so lift is within its limits with pallets and/or attachments
- secure and balance load
- ensure adequate clearance for vehicle and load
- ensure clear path for machine movement
- ensure safe handling of hazardous materials
- drive vehicle with forks/load in correct position
- drive forward or in reverse to ensure maximum visibility or stability
- Unload materials and equipment
 - position vehicle and place load in required locations

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge
 - lower forks to ground when parked
- Transport materials and equipment
 - know weight of load and do not exceed limitations of forklift

TASKS 12.16 & 12.17 are not applicable to this occupation

TASK 12.18 OPERATE ROCK BREAKER

Importance: Important

Frequency: Daily

SUB-TASK:

1. Demonstrate equipment knowledge
2. Prepare for rock breaker operations

- operate machine controls smoothly
- change tips according to manufacturer's instructions
- Prepare for rock breaker operations
 - mobile and permanent rock breakers
 - ensure machine, breaker and type of tip are compatible with material and end product
 - fit protection devices to excavator
 - position excavator for optimum work pattern
 - identify when to change pin size

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge
 - position tool on target
 - keep rock breaker in near vertical position during operations
 - maintain weight on pick during operation

TASKS 12.19 – 12.21 are not applicable to this occupation

AREA OF COMPETENCY 12: OPERATE SUPPORT EQUIPMENT

TASK 12.22 OPERATE DEWATERING SYSTEMS

Importance: Important

Frequency: Daily

SUB-TASK:

1. Demonstrate equipment knowledge
2. Monitor reagent systems

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge
 - includes stock tanks, decanters, pumping systems, sampling systems, rakes, drive system, feed wells
- Monitor reagent systems
 - check shell, rakes (height, torque, integrity), motor and gear box, U/F pumps and density, flow rates, water supply, motion detectors, monitoring devices
 - follow communication procedures regarding interlocking systems
 - ensure system contains proper amount, type and strength of reagents
 - measure quantities of reagents

TASK 12.23 OPERATE PUMPS

Importance: Important

Frequency: Daily

SUB-TASK:

1. Demonstrate equipment knowledge
2. Install pump
3. Monitor pump operation
4. Switch pumps

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge
 - includes piston pumps, plunger pumps (grout pump), centrifugal pumps (trash or volume pump), screw pump (Moyno pump), diaphragm pump
 - may be powered by internal combustion, diesel, hydraulic, air or electric motors
- Install pump
 - identify components required (pumps, water heaters, suction/discharge hoses, pressure relief valve)
- Monitor pump operation
 - place equipment at predetermined location(s)
 - secure pump and discharge lines
 - control volume, temperature, pressure, minimal vibration, direction of flow from discharge lines
 - ensure no excessive leaking of gland water
 - perform routine checks
 - troubleshoot pumping system
 - clear blockages
 - identify flow/head requirements and materials (i.e. slurry, reagent)
 - depressurize lines
- Switch pumps
 - switch to stand-by pump

TASKS 12.24 – 12.32 are not applicable to this occupation

AREA OF COMPETENCY 13: PROTECT THE ENVIRONMENT

TASK 13.1 COMPLY WITH ENVIRONMENTAL POLICIES, PROCEDURES AND PERMITS

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Minimize environmental impact of operations
2. Follow appropriate handling and clean-up procedures for various substances
3. Follow site abandonment and reclamation practices
4. Comply with permit conditions

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Minimize environmental impact of operations
 - minimize waste produced (use recommended quantities of additives, do not let equipment run/idle unnecessarily, recycle fluid returns)
 - use biodegradable and non-toxic additives and store and handle with caution to prevent loss
 - use appropriate waste disposal measures
 - be aware of restrictions for emissions and noise
 - avoid practices that may cause erosion, soft ground rutting
 - follow existing roads when possible
 - when constructing new access routes avoid sensitive areas (swamps, rivers, streams, lakes), avoid cutting, pushing or dumping debris into water courses, use proper bridging techniques, avoid recreational and historical/cultural/archaeological sites, plantations, fish, wildlife and their habitats, and whenever possible, minimize tree cutting

- when setting up work site avoid unnecessary stripping or grubbing of vegetation, neatly stockpile disturbed overburden for reclamation purposes, maintain required distance from water bodies and courses, ensure campsite construction conforms to regulations and safety practices (structure spacing, noise abatement, fire control)

- Follow appropriate handling and clean-up procedures for various substances
 - identify environmental issues
 - assess severity of environmental issue
 - take corrective action
 - report environmental issue and corrective action to appropriate personnel
 - record environmental issue and corrective action in log-book
- Follow site abandonment and reclamation practices
 - cement holes, if required
 - stop or cap artesian wells
 - return sumps to original ground condition
 - restore work site back to an acceptable environmental state

TASK 13.2 is not applicable to this occupation

AREA OF COMPETENCY 13: **PROTECT THE ENVIRONMENT**

TASK 13.3 **MANAGE WASTE**

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Manage solid waste
2. Manage liquid waste
3. Manage recycling waste

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Manage solid waste
 - use approved septic or sewer system for sewage
 - use sumps to remove excess water from solids (ensure sumps are of adequate size and capacity; direct water to designated areas with good drainage where natural percolation can occur without reappearance)
- Manage liquid waste
 - includes sewage, sludge, cuttings, waste oil
 - document and follow instructions for disposal of all effluent
 - collect used petroleum products (transfer used oil into clean pails/containers marked “waste oil” and dispose of as required)
 - use special precautions when working adjacent to lakes, rivers or creeks (do not direct excess fluid into any watercourse unless treated and approved by regulatory authorities)
- Manage recycling waste
 - cardboard, scrap metal, empty fuel drums, empty propane tanks and unused lumber must be salvaged and recycled

AREA OF COMPETENCY 13: **PROTECT THE ENVIRONMENT**

TASK 13.4 **MANAGE FUELS AND OTHER HAZARDOUS MATERIALS**

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Identify types of fuels and other hazardous materials
2. Transfer fuels and other hazardous materials
3. Use spill prevention measures
4. Store fuels and other hazardous materials
5. Transport fuel/propane and other hazardous materials

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Identify types of fuels and other hazardous materials
 - types of fuels include gasoline, propane, diesel
 - types of hazardous materials include mill reagents (e.g. cyanide, collectors, frothers), oil, hydraulic fluid, antifreeze, battery acid grease, solvents, fuel additives
- Transfer fuels and other hazardous materials
 - use closed systems
 - drain transfer hoses
 - ensure emergency equipment is available and accessible (fire extinguisher, spill kits)
 - do not leave fuel, equipment or fuel pump nozzles unattended while refueling
- Use spill prevention measures
 - includes oil absorbent matting, drip trays
 - replace caps and nozzles on fuel cans immediately after use
 - fill fuel tank to safe level; do not overfill
 - identify and repair leaks immediately
- Store fuels and other hazardous materials
 - ensure all equipment used for storage of fuels and other hazardous materials are in good condition and/or properly installed
 - store cylinders and other fuel containers in an upright position in approved storage area
 - ensure proper labelling of containers and signage
- Transport fuel/propane and other hazardous materials
 - obtain certification to transport dangerous goods
 - ensure proper permits are in place
 - check bills of lading against supplies
 - use appropriate types and sizes of containers to transport hazardous materials

AREA OF COMPETENCY 13: **PROTECT THE ENVIRONMENT**

TASK 13.5 **RESPOND TO SPILLS**

Importance: Very Important

Frequency: Rarely

SUB-TASK:

1. Assess danger
2. Manage spill
3. Complete follow-up

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Assess danger
 - halt operations
 - identify substance
 - determine if risk to self and others
 - take precautions if substance is highly volatile
- Manage spill
 - take action to stop a continuous spill (turn off pump, reposition overturned containers)
 - determine spill spread (into ground, run off into watercourse)
 - initiate spill containment (initiate company contingency plan for specific situation, isolate and remove spill material and contaminated material under and around spilled material if possible)
 - monitor safe, uncontained spill until relieved by appropriate personnel
- Complete follow-up
 - follow spill reporting procedures (notify proper authorities (e.g. Spill Line))
 - notify supervisor
 - complete required documentation (e.g. Spill Report form)

AREA OF COMPETENCY 14: **USE HAND AND POWER TOOLS**

TASK 14.1 **DEMONSTRATE HAND AND POWER TOOL KNOWLEDGE**

Importance: Important

Frequency: Daily

SUB-TASK:

1. Trained in proper use and application of hand and power tools
2. Inspect tool for defects
3. Maintain tools
4. Store tools

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Trained in proper use and application of hand and power tools
 - includes wrenches (socket, adjustable, pipe, box-end, etc.), impact tools, electric tools, chainsaws, handsaws, hammers, screwdrivers, hose repair equipment, shovel
 - identify capabilities and limitations of tool
 - select appropriate type, size, shape and capacity of hand tools for type of task to be completed, type of material to be used, necessary force to be applied, most efficient usage
 - assemble and adjust hand tools according to manufacturer's recommendations
 - follow procedures for start-up, operation, shut-down, disconnect and use/replacement of attachments
 - position tool properly
 - use safety features
- Inspect tool for defects
 - identify any defective, broken or damaged tools and attachments
 - assess severity of defect/damage
 - do not use defective tools
 - do not remove or modify safety devices
 - remove and/or lock out and tag any defective, broken or damaged tools and attachments
 - report defect/damage to appropriate personnel
- Maintain tools
 - clean and inspect tool before returning to storage
 - ensure tool is unplugged when replacing worn or dull drill bits, saw blades
- Store tools
 - store in appropriate designated place

AREA OF COMPETENCY 14: **USE HAND AND POWER TOOLS**

TASK 14.2 **USE POWER, PNEUMATIC, POWDER-ACTUATED AND HYDRAULIC POWERED TOOLS**

Importance: Important
Frequency: Monthly

SUB-TASK:

1. Select appropriate tool
2. Use tool
3. Demonstrate hand and power tool knowledge

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Select appropriate tool
 - includes air grinder, air lights, generators, chainsaws, hydraulic tools (jacks, air tugger, winch)
 - clean tools according to manufacturer's instructions

- Demonstrate hand and power tool knowledge
 - use proper extension cords and secure them in safe location
 - inspect extension cords before using
 - use ground fault protector
 - place hoses and lubricators properly to avoid tripping and other hazards
 - connect tools to air lines following procedures
 - follow proper pneumatic or hydraulic tool shut-down procedures

TASKS 14.3 – 14.5 are not applicable to this occupation

TASK 14.6 **OPERATE MOBILE GENERATORS**

Importance: Somewhat Important
Frequency: Rarely

SUB-TASK:

1. Demonstrate hand and power tool knowledge
2. Operate generator under no load conditions
3. Operate generator under load conditions

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate hand and power tool knowledge
 - portable generators can be diesel driven, gas driven, air driven
 - set up equipment, ensuring it is secure and on a flat, level base

AREAS OF COMPETENCY 15 – 20 ARE NOT APPLICABLE TO THIS OCCUPATION

AREA OF COMPETENCY 21: CONDUCT LIFTING OPERATIONS

TASK 21.1 OPERATE LIFTING EQUIPMENT

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Describe rigging and lifting equipment
2. Demonstrate equipment knowledge
3. Select and use proper rigging/lifting equipment
4. Trained in appropriate lift mechanisms and rigging programs

- may include hooks (with safety latches), slings or chains (specific to lifting), anchor (attached to an existing or temporary beam), hoisting plugs, weight indication devices
- power-operated devices may have over-wind protection
- chain blocks include chains and gears (enclosed in a metal case)
- come-a-long includes a ratchet lever
- Select and use proper rigging/lifting equipment
- store slinging equipment in designated/approved area
- inspect equipment for defects

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Describe rigging and lifting equipment
 - includes non-mechanized and mechanized lifting equipment

TASK 21.2 PLAN AND SET UP LIFT

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Obtain authorization to conduct lift
2. Select lifting equipment
3. Set up lifting equipment
4. Prepare workplace for lift

- Set up lifting equipment
 - secure area using guards (banners, barricades)
 - ensure devices are securely anchored
 - activate all necessary warning devices
- Prepare workplace for lift
 - activate all necessary warning devices

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Obtain authorization to conduct lift
 - establish daily log-book for overhead cranes
- Select lifting equipment
 - use only certified rated rigging equipment
 - match capacity of lifting equipment to load
 - determine attachments to be used such as hooks, chains or slings (wire, rope, nylon)

AREA OF COMPETENCY 21: CONDUCT LIFTING OPERATIONS

TASK 21.3 RIG AND SECURE LOAD

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Rig load
2. Secure load

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Rig load
 - ensure proper rigging training and qualifications
 - attach selected rigging equipment
 - centre and balance load
 - use attachments to maintain balance
 - ensure load is free of all equipment (hoses, cables and other tools)
- Secure load
 - place shims, fillers and spacers to secure load

TASK 21.4 MAKE THE LIFT

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Test lift
2. Move, place and secure load

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Test lift
 - conduct test lift as per site policies and procedures
- Move, place and secure load
 - control load; lift load slowly, steadying with tag line, move load in one direction only, ensure clear path for load travel, keep load as close to ground as possible, keep load clear from operating equipment
 - ensure area is clear before lowering load
 - release load
 - use spotter and proper hand signals according to site policies and procedure

AREA OF COMPETENCY 21: **CONDUCT LIFTING OPERATIONS**

TASK 21.5 **DISMANTLE AND STORE LIFTING EQUIPMENT**

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Remove lifting equipment
2. Return workplace to normal condition
3. Inspect and replace damaged or defective lifting equipment

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Remove lifting equipment
 - remove hooks, slings and accessories
 - inspect equipment for defects
- Return workplace to normal condition
 - store slings according to manufacturer's specifications

AREAS OF COMPETENCY 22 – 24 ARE NOT APPLICABLE TO THIS OCCUPATION

AREA OF COMPETENCY 25: OPERATE PROCESSING EQUIPMENT

TASK 25.1 OPERATE CRUSHER

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Demonstrate equipment knowledge
2. Operate crusher
3. Clear blockages

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge
 - follow start-up procedures, (do pre-operational check, ensure all auxiliary equipment is operational, set gap (as applicable))
 - observe special precautions and procedures when bridging occurs (stored energy)
 - conduct operation checks (clear screens, remove tramp steel)
- Operate crusher
 - conduct operational checks (e.g. temperature, water flow, oil temperature)
 - operate according to standard operating procedures
 - ongoing housekeeping
 - identify and address spillage
- Clear blockages
 - anticipate unexpected movement of crusher and/or feed (resulting from stored/potential energy)

TASK 25.2 OPERATE FEEDERS

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Demonstrate equipment knowledge
2. Remove jams

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge
 - includes pan feeder, screw feeder, belt feeder, pneumatic feeder, tube feeder, vibratory feeder, tripper, apron feeder, rotary valve feeder, drag feeder, hydrostroke feeder
 - understand layout of feeder
 - ensure all components are in place and functional
 - ensure all related systems are activated in proper sequence
 - cross over/under feeder at designated areas only
- Remove jams
 - remove jams according to site standard operating procedures
 - be aware of unsuspected movement from stored (potential) energy

AREA OF COMPETENCY 25: OPERATE PROCESSING EQUIPMENT

TASK 25.3 OPERATE SCREEN

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Demonstrate equipment knowledge
2. Set up screen
3. Clear blinding
4. Replace screen panels

- Set up screen
 - ensure footing is secure (firm and even base)
 - ensure adequate clearance for equipment and components
- Clear blindings
 - ensure screen operation is shut down, locked out, de-energized and tagged before performing work

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge
 - anticipate unexpected movement of screen, components or feed (resulting from stored/potential energy)
 - ensure related systems are shut down or deactivated in proper sequence

TASK 25.4 OPERATE CONVEYOR

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Demonstrate equipment knowledge
2. Set up conveyor
3. Convey material
4. Remove blockages
5. Move conveyor and components

- Set up conveyor
 - ensure footing is secure (firm and even base)
 - ensure adequate clearance for equipment operation
 - ensure correct alignment and adjustment of conveyor belt
 - ensure guards are in proper place of moving parts
 - ensure tail pulley switch is in place if applicable
 - ensure emergency stop pull cords are in place
- Convey material
 - ensure related systems are activated in proper sequence
 - monitor flow
 - ensure correct placement of material on belt to prevent spillage
- Remove blockages
 - ensure conveyor is stopped, locked out, de-energized and tagged before removing blockages
 - remove manually or mechanically
- Move conveyor and components
 - load conveyor on an incline

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge
 - includes belt conveyors, drag conveyors, pneumatic conveyors, screw conveyors, bucket elevators, high angle, radial stacker conveyors
 - anticipate unexpected movement of conveyor components or feed (resulting from stored/potential energy)
 - cross under conveyor at designated areas only
 - stay clear of moving pulleys

AREA OF COMPETENCY 25: OPERATE PROCESSING EQUIPMENT

TASKS 25.5 – 25.7 are not applicable to this occupation

TASK 25.8 OPERATE MILLS

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Demonstrate equipment knowledge
2. Control densities
3. Manage power draw
4. Maintain mill media charge

- identify name, function and location of mill's principal components (drive motor, motor cooling fan, drive shaft and bearings, clutch, pinion gear, feed chute, shell, liners, lifters and bolts, ring/bull gear, trunnion and trunnion bearings, trommel screen, lubrication system(s), grinding media, controls (main disconnect), interlocks, stop/start switches (remote/local), selector switch (remote/local), cooling system(s), sound boxes)

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge
 - includes ball mill, pebble mill, autogenous mill/scrubber, semi-autogenous mill, rod mill, tower mill, isamill, SMD

TASK 25.9 OPERATE SIZE CLASSIFIERS

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Demonstrate equipment knowledge
2. Control feed flow
3. Control density
4. Check grinds

- Control feed flow
 - remove and clean excess spillage and blockages
 - don't overload
- Control density
 - by sampling, reading dials, vary speed of pump, add more or less water, add or remove cyclones

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge
 - includes cyclone classifier, screw classifier, trommel screens

AREA OF COMPETENCY 25: OPERATE PROCESSING EQUIPMENT

TASK 25.10 OPERATE TANK LEACHING EQUIPMENT

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Demonstrate equipment knowledge
2. Check and monitor process parameters
3. Check condition of tanks

- Check and monitor process parameters
 - add reagents as required (cyanide, calcium, chlorine, hydrochloric acid, sulfuric acid)
 - monitor particle size

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge
 - atmospheric leach, pressurized leach
 - understand required temperature and pressure settings
 - understand reagent efficiency

TASK 25.11 OPERATE SEPARATORS

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Demonstrate equipment knowledge
2. Check and monitor process parameters

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Check and monitor process parameters
 - maintain flows

TASK 25.12 OPERATE FLOTATION EQUIPMENT

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Demonstrate equipment knowledge
2. Check and monitor process parameters

- Check and monitor process parameters
 - control quantity of reagents, percent solid, addition of air, level of froth/pulp, launder water, pump speed, pH level
 - ensure cells are at proper levels
 - unplug cells as required

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge
 - includes flotation air, bank of cells, conditioner, collector, floatation column, cells (roughers, scavenger, cleaners), pumping system, in-line assay system

AREA OF COMPETENCY 25: OPERATE PROCESSING EQUIPMENT

TASK 25.13 OPERATE FILTRATION SYSTEMS

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Demonstrate equipment knowledge
2. Control system

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge
 - includes stock tanks, pumping systems, sampling systems, drive systems, lubrication systems, hydraulic systems, pneumatic systems, vacuum systems, filter cloth

- Control system
 - control moisture, filtrate, wash water, pump speed, pressure, density
 - monitor filter condition (thickness of filter cake)
 - monitor boot levels and agitation
 - ensure vacuum system is operational

TASK 25.14 HANDLE FINAL PRODUCT

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Bring product to shipping state
2. Store product in appropriate facility

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Bring product to shipping state
 - includes drying, packaging, loading out, sorting, sampling, implementing quality control methods
- Store product in appropriate facility
 - includes hoppers, silos, vaults, sheds/bins, bags

AREA OF COMPETENCY 25: OPERATE PROCESSING EQUIPMENT

TASK 25.15 MOVE AND ASSEMBLE PIPES

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Shut down system
2. Uncouple pipe
3. Reconnect system

- Uncouple pipe
 - replace with new pipe
- Reconnect system
 - re-energize system
 - check for leaks

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Shut down system
 - isolate system
 - drain and/or flush system
 - close all valves and cap lines

TASK 25.16 MAINTAIN HOSES

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Describe hoses
2. Use hoses
3. Repair hoses

- Use hoses
 - inspect hoses to ensure they are not damaged
 - turn on air or water slowly to detect any unnoticed damage
 - do not let hose become a tripping hazard
 - protect hoses from falling muck
 - air hoses: ensure clear of muck, debris or water before connecting to a piece of equipment, use whip check when attaching air hoses to diamond drills
 - water hoses: be aware of sudden surges of pressure in water hoses caused by air locks
 - use correct fitting for hoses (joiners, ends)
 - use clamps to secure hose to fitting (select correct size, use correct number of clamps for size of hose, punch to ensure connection, be careful not to cut hose)
- Repair hoses
 - discard damaged propane hoses

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Describe hoses
 - water hose: commonly used to supply drill with water or wash the headings or rock face, usually made of rubber, come in various sizes, usually 1 inch diameter
 - air hose: used for low/high air pressure applications, e.g. pneumatic tools, usually made of rubberized material

AREA OF COMPETENCY 25: OPERATE PROCESSING EQUIPMENT

TASK 25.17 OPERATE DUST COLLECTORS

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Follow standard operating procedures for control of dust
2. Monitor equipment

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Follow standard operating procedures for control of dust
 - monitor dust levels through use of dust sensor information, visual check (cameras in specific locations), personal physical reactions
 - scrubbers, bag houses

- Monitor equipment
 - ensure chute inspection hatches are closed during operations
 - ensure dust cyclone and exhaust fan are operating properly
 - report excessive dust problem to supervisor

TASK 25.18 MAINTAIN ORE INVENTORIES

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Monitor bins and stockpile levels

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Monitor bins and stockpile levels
 - report levels to appropriate personnel (e.g. notify crusher, call for more feed)
 - manage ore blend to maximize throughput

AREA OF COMPETENCY 25: OPERATE PROCESSING EQUIPMENT

TASK 25.19 OPERATE PRESSURE OXIDATION EQUIPMENT

Importance: Very Important

Frequency: Daily

SUB-TASK:

1. Demonstrate knowledge about how to operate the pressure oxidation vessel
2. Conduct pre-operational and operational inspection of pressure vessel
3. Introduce oxidizing agent and mineral
4. Prepare leaching solution as needed
5. Transfer batch to next stage of processing
6. Transfer / ship product

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Conduct pre-operational and operational inspection of pressure vessel
 - inspect hatches, piping joints, valves, etc.
 - check gauges and control systems
 - maintain the reaction in a controlled state
 - tag out and request maintenance when needed
- Introduce oxidizing agent and mineral
 - check and maintain pH and strength of oxidizing agent
 - introduce required amount to pressure vessel
 - introduce oxidizer modifiers if required (e.g. chlorine, acids, etc.)
 - bring to required Delta Temperature if required
 - vent and neutralize excess gases (operate and maintain pH neutralizing scrubbers)
 - introduce required amount of mineral to be processed
 - pressurize and heat batch to required temperature
- Transfer batch to next stage of processing
 - operate cooling vessels
 - operate pumping systems
 - operate filtration / oxidizer recovery and recycling systems
 - operate drying systems

AREA OF COMPETENCY 26: **HANDLING REAGENTS**

TASK 26.1 **USE CHEMICALS SAFELY**

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Identify chemicals used in specific mineral processes
2. Handle reagents
3. Mix reagents

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Identify chemicals used in specific mineral processes
 - CuSO_4 for zinc activation
 - Cyanide for pyrite depression
 - Xanthate collector for copper sulfite
- Handle reagents
 - maintain training for handling relevant chemicals
 - use specialized PPE as required
- Mix reagents
 - avoid sparks and open flames (use non-sparking tools) where necessary
 - conduct appropriate mix concentration tests (SG, pH, colour)
 - ensure no incompatibility of chemicals
 - ensure proper ventilation

TASK 26.2 **MONITOR REAGENT ADDITIONS**

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Set and measure addition rates
2. Perform visual check of addition points
3. Record additional rates and tank levels as required

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Set and measure addition rates
 - use appropriate measuring device
 - check flow
 - check for leaks
 - report discrepancies to appropriate personnel

AREA OF COMPETENCY 26: **HANDLING REAGENTS**

TASK 26.3 **MONITOR INVENTORY**

Importance: Important
Frequency: Daily

SUB-TASK:

1. Inspect levels of inventory
2. Report amounts used
3. Check balance of inventory
4. Monitor holding and mix tank levels

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Inspect levels of inventory
 - conduct visual inspection
 - report any deficiencies in reagents
- Check balance of inventory
 - count stock within the plant and replenish as needed
- Monitor holding and mix tank levels
 - ensure batch is mixed to replenish holding tank

AREA OF COMPETENCY 27: OPERATE TAILINGS SYSTEMS

TASK 27.1 RECOVER WATER

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Pump water
2. Send water to reclamation area (settling ponds)

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Pump water
 - treat water for chemicals
- Send water to reclamation area (settling ponds)
 - sample water and monitor levels of ponds
 - inspect weirs and dam systems

TASK 27.2 TREAT AND MANAGE TAILINGS

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Treat tailings
2. Dispose of tailings

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Treat tailings
 - follow standard operating procedures
 - check the pH level
 - monitor integrity of system
- Dispose of tailings
 - send tailings to appropriate area (e.g. place sand upstream and downstream of the dam core)

TASK 27.3 PASTE BACKFILL

Importance: Very Important
Frequency: Daily

SUB-TASK:

1. Thicken tailings
2. Dewater tailings
3. Operate a paste pump

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Thicken tailings
 - understand and operate a tailings thickener
 - measure densities
 - understanding of rake torque and bed pressure
- Dewater tailings (blend with cement optional)
 - operate a filter press or disc filter
 - operate a hopper or twin screw system
- Operating a paste pump
 - understanding line pressure
 - knowledge of bulk heads underground
 - measuring slumps
 - cleaning and pigging paste line

AREAS OF COMPETENCY 28 - 31 ARE NOT APPLICABLE TO THIS OCCUPATION
