NATIONAL OCCUPATIONAL STANDARD

UNDERGROUND MINER

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

INTRODUCTION

National Occupational Standards (NOS) establish clear, objective benchmarks of the skills and knowledge required for workers to perform in a particular occupation. Each NOS reflects a complete list of competencies required to perform a specific job.

The Mining Industry Human Resources Council (MiHR) developed and maintains a suite of seven NOS for the Canadian mining industry. The development and maintenance of each NOS is led by a National Occupational Standard Development Committee (NOSDC) made up of subject-matter experts from various groups across Canada, including industry, labour and education. NOS development committees undertake a regular review (every three to five years) of the NOS to ensure they remain current and relevant to industry.

For more information on the NOS or our Canadian Mining Skills Development Strategy, please visit **mihr.ca/standards-training-recognition** or email **standards@mihr.ca**.

UNDERSTANDING THE NOS

Each National Occupational Standard reflects a complete list of competencies required to perform a specific job. All areas of competence and their tasks for the entire suite of seven NOS have been pulled together in MiHR's Master Competency List. The Master Competency List allows you to understand those competencies and tasks that are common across multiple occupations versus the specialties that set them apart.

Competency areas that are common across multiple occupations within the mining industry are referred to as common competencies. They are the foundational competencies and skills required to work in the mining industry, and include tasks such as working safely, and knowledge of workplace policies and legislation.

Each NOS builds on the common competencies by including additional competencies that are unique to each occupation. Both types of competencies are referenced in the NOS document with multiple tasks and sub-tasks to provide a deeper context and understanding of each area of competency. Each task is further defined by its general frequency. References and examples of abilities and knowledge are included to ensure adequate interpretation of each sub-task.

MiHR's Master Competency List reflects all areas of competency for MiHR's suite of NOS and each area of competency and its related tasks keep the same identification number regardless of the NOS in which they are included.

Should an area of competency or task not be included in an NOS, the related details for that area of competency or task will not be present in the NOS. In its place, there will be an indication that the task is not applicable to this NOS.

ACKNOWLEDGEMENTS

National Occupational Standards Committee Members (2023)

Gayle Campbell, College of New Caledonia
William McMillan, Redpath Mining Inc.
William McCleary, New Gold – Rainy River
Leigh Gauthier, Aurora College
Dan Miron, Vale
John Renaud, Osisko Development Corp – Barkerville Mine
Dave Hamilton, New Gold – New Afton
Thomas Van Steele, New Gold – New Afton
Thomas Parker, Agnico Eagle Mines

Photo courtesy of Eldorado Gold.

UNDERGROUND MINER

Area of Competency 1: Policies and Legislation

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

TASK 1.1
COMPLY WITH COMPANY POLICIES AND PROCEDURES

SUB-TASK

1. Understand, sign off and follow company policies and procedures.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Includes Standard Operating Procedures (SOP)
- 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.
- Comply with drug and alcohol policy.
- Comply with updates and revisions to policies and procedures.

TASK 1.2
UNDERSTAND AND COMPLY WITH APPLICABLE WORKPLACE LEGISLATION AND REGULATIONS

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, Explosive Regulations.
- Comply with updates and revisions to legislation and regulations.

UNDERGROUND MINER

Area of Competency 2: Work Safely

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

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

SUB-TASKS

1. Recognize situations that require use of PPE.
2. Select, inspect, use, maintain and store appropriate PPE for:
   - Head protection
   - Eye protection
   - Foot protection
   - Hand protection
   - Hearing protection
   - Respiratory protection
   - High-visibility clothing and apparel
   - Specific conditions (fall protection, welding, radiation, handling chemicals, energized work, roasting)
3. Wear clothing appropriate for work conditions and tasks.
4. Follow site, provincial and territorial standards.
   - 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.

TASK 2.2
PRACTICE AND MAINTAIN GOOD HOUSEKEEPING

SUB-TASKS

1. Maintain clean work area.
2. Use appropriate equipment for task.
3. Take corrective action as required.
4. Appropriately dispose of waste materials safely.
5. Organize and classify materials, supplies and equipment.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Maintain clean work area.
  - Ensure priority areas are clear first as identified in policies and procedures.
  - Keep work areas free from clutter.
  - Keep work areas free of ice, grease and mud.
- Use appropriate equipment for task (e.g., broom, scraper, water hose, vacuum, blow pipe or air lance, mobile equipment).
  - Clean, maintain and return tools and equipment to storage immediately after use.
  - Report, tag out 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

SUB-TASKS

1. Recognize hazardous or potentially hazardous conditions.
2. Observe safety precautions in hazardous conditions.
3. Take corrective action.
4. If hazardous condition 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.
  - Follow water management plans.
  - 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, hoist pits, ladder ways), protruding objects (nails, anchors), tripping or slipping hazards (hoses, rocks, muck, 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.
- 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 condition cannot be immediately corrected.
  - Put up signs, barricade area or post guard.
  - 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

SUB-TASKS

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 and identify size, weight, center of gravity and dimensions of load.
  - Assess load and understand Musculoskeletal Disorder (MSD).
  - 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
RECOGNIZE CONFINED SPACE WORK AND FOLLOW POLICIES AND PROCEDURES

SUB-TASKS

1. Obtain necessary training and authorization.
2. Prepare for confined space work.
3. Conduct pre-entry checks.
4. Conduct confined space work.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Prepare for confined space work.
  - Complete all necessary training for confined space work.
  - Ensure certification is up to date.
  - Obtain necessary work permits, i.e., confined space, hot work.
  - Post signs.
  - Remove hazards.
- Conduct pre-entry checks as per policies and procedures.
  - Lock out and tag all equipment, pipes and lines.
  - Ensure adequate ventilation and lighting.
  - Ensure warning devices are in place and properly calibrated to manufacturer's specifications.
  - Post a spotter.
  - Ensure proper first-aid precautions.
  - Ensure emergency rescue plans are in place.
- Conduct confined space work.
  - Communicate readiness to enter work area.
  - Re-evaluate air quality at regular intervals.
  - Regularly check air temperature.

TASK 2.6
WORK AROUND MOBILE EQUIPMENT

SUB-TASKS

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

- Communicate with equipment operator.
  - Communicate with equipment operator/skip tender/cage tender/dispatch and verify acknowledgement.
  - Be aware of locations of communication equipment.
  - Use hand signals.
- Obey rules of conduct.
  - Maintain safe working distance and loads in tow.
  - Obey vehicle warning signals and alarms.
  - Yield the right of way.
- Avoid hazardous conditions.
  - Use designated travel ways around equipment.
  - Stay clear of suspended loads.
  - Avoid blind spots, remain visible.
  - Do not cross guards or barricades.
  - Recognize and utilize safety bays.
  - Be aware of trailing cables.
  - Obey signage and established right of way policies.

TASK 2.7
WORK AROUND STATIONARY EQUIPMENT

SUB-TASKS

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

- Work in authorized locations only.
  - Including but not limited to: drill, pumps, pneumatic equipment, high pressure hoses and generators, ensuring guards are in place.
  - Work from safe location.
- Obey rules of conduct.
  - Maintain safe working distance.
  - Observe alarms and warning systems.
  - Communicate with co-workers.
- Avoid hazardous conditions.

TASK 2.8
WORK AROUND WATER HAZARDS

SUB-TASKS

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

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- 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.
- Ensure safety of personnel working around water hazards.
  - Use personal floatation devices (PFDs).
  - Monitor water levels.
  - Adhere to environmental standards.
  - Perform dam monitoring.
- Identify type of water hazard.
- Complete training in sending and receiving loads.
  - Review of sign-offs.
  - Proof of competency.

TASK 2.10
WORK IN CRAMPED AND/OR AWKWARD CONDITIONS (OR LIMITED MOBILITY)

SUB-TASKS

1. Knowledge of site-specific hazards.
2. Ensure lock out, de-energize and tag of related equipment.
3. Assess hazard to personal safety.
4. Identify and utilize provisional working techniques.
5. Organize your work.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Knowledge of site-specific hazards.
  - Identify Job Hazard Analysis (JHA).
- Ensure lock out, de-energize and tag of related equipment.
  - Dissipate stored energy, i.e., air, oil, water, hydraulics.
  - Secure blocking of equipment.
- Assess hazard to personal safety.
  - Ground control, potential for load shifting, heat, ventilation, watch for obstructions.
  - Identify and utilize provisional working techniques.
  - Modify lifting technique.
  - Prepare the site.
  - Remove combustibles, wet down the area, ensure necessary firefighting equipment is present.
  - Follow site policies and procedures.
  - Ensure proper ventilation.

TASK 2.11
PREPARE FOR HOT WORK

SUB-TASKS

1. Recognize requirements for a hot work environment and obtain necessary permits.
2. Inform appropriate personnel for fire watch.
3. Prepare the site.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Recognize requirements for a hot work environment and obtain necessary permits.
  - Welding, cutting, grinding, soldering, using electrical equipment not suitable for a hazard location, combustible engine, “frost fighting”.
- Inform appropriate personnel for fire watch.
  - Post guard and check environment after work as per site policies and procedures.
  - Prepare the site.
  - Remove combustibles, wet down the area, ensure necessary firefighting equipment is present.
  - Follow site policies and procedures.
  - Ensure proper ventilation.

UNDERGROUND MINER

Area of Competency 3: Signs, Barricades, Traffic, Plans and Drawings

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

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

SUB-TASKS

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, without proper authorization.

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 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
RECOGNIZE AND COMPLY WITH AUTOMATED AUDIBLE ALARMS AND EQUIPMENT LIGHT INDICATORS

SUB-TASKS

1. Demonstrate knowledge of equipment procedures and specificities.
2. Validate the connectivity of the system by the remote operator.
3. Knowledge of plans and layouts of the remote operation.
4. Operate remotely the mining equipment from surface and underground.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate knowledge of equipment procedures and specificities.
  - Lock out the barrier electrical control panel.
  - Validate the audible and visual alarms.
  - Ensure the preoperational checks of the equipment.
- Inspect the work environment and ensure the absence of any employees.
  - Arm and activate the equipment to proceed with remote control operations.
  - Inspect and test the barrier systems before activation/barrier #1 for the equipment and barrier #2 for the employees.
  - Unlock the barrier electrical control panel to activate the automate operating area.
- Validate the connectivity of the system by the remote operator.
  - Ensure a proper electronical communication between the operating area systems.
- Knowledge of plans and layouts of the remote operation.
  - Follow and interprets the plans and layouts according to engineering specifications.
- Operate remotely the mining equipment from surface and underground.
  - Take control of the work area.
  - Operate automated mining equipment such as scoops, trucks and others.

TASK 3.3
INSTALL, REMOVE, MAINTAIN AND STORE SIGNS AND BARRICADES

SUB-TASKS
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.

TASK 3.4
RECOGNIZE AND COMPLY WITH TRAFFIC MANAGEMENT PLANS

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

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE
- Recognize traffic signs and lights.
  - Includes: traffic signs, blasting signs, directional signs, restricted area signs.
- 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).

TASK 3.5
UNDERSTAND AND USE INFORMATION PRESENTED ON PLANS AND DRAWINGS

SUB-TASKS
1. Recognize symbols, abbreviations, colour coding.
2. Interpret drawings.
3. Recognize and comply with Emergency Response Drawings.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE
- Recognize symbols, abbreviations, colour coding.
  - Includes direction, scale, elevation, depth.
- Interpret drawings.
  - Includes blueprints, P&ID (piping and instrumentation diagram), drill layout patterns, evacuation routes, shaft compartments, services (e.g., air, water, ventilation).

UNDERGROUND MINER

Area of Competency 4: Fire Safety

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

TASK 4.1
BE PREPARED TO RESPOND TO FIRES

SUB-TASKS

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 and keep up to date.
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

SUB-TASKS

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

- Select and use appropriate fire extinguisher and/or suppression equipment.
  - 10- or 20-pound extinguisher.
  - Fire suppression system.
  - Know manual bypass of suppression system.
- Use proper fire extinguishing techniques.
  - P.A.S.S. (Pull, Aim, Squeeze and Sweep).
  - Follow operational instructions.

**Excluding battery fires, report to appropriate personnel.*

TASK 4.3
FIRE PREVENTION

SUB-TASKS

1. Properly store combustible materials.
2. Proper maintenance of equipment.
3. Control sources of flame/ignition.
4. Safely operate open flame and hot work 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, wastepaper, coal, sulfide, wood and timber.
- Proper maintenance of equipment.
  - Ensure fire suppression is intact.
  - Clean grease buildup.
  - Clean diesel filters.
  - Do not overfill fluid levels.
- Control sources of flame/ignition.
  - Cigarettes, sparks, electrical discharges, friction, foreign material near exhaust, open flame.
- Safely operate open-flame and hot work equipment.
  - Includes: acetylene torch, tiger torch, coil torch, diesel heater and stove.
  - Refer to company hot work policies and procedures.
  - 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.

UNDERGROUND MINER

Area of Competency 5: Emergency Situations

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

TASK 5.1
PREPARE FOR EMERGENCY SITUATIONS AND CONDITIONS

SUB-TASKS

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, stations and attendants.
4. Know the location of and how to use eye wash stations, emergency showers, Safety Data Sheets (SDS), 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.
9. Know emergency reporting protocols.

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, AED equipment.
- 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)

SUB-TASKS

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

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.
- Access, understand and follow SDS instructions.
  - Knowledge of location of further instructions and key contact personnel.

TASK 5.3
PARTICIPATE IN SAFETY PROGRAMS

SUB-TASKS

1. Attend and participate in safety meetings.
2. Follow company safety initiatives.
3. Management of change.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Attend and participate in safety meetings.
  - Identify types of safety meetings (site orientation, work area orientation, toolbox meeting, joint health and safety committee meeting).
- Follow company safety initiatives.
  - Safety initiatives include (zero harm, five-point safety, behavioural-based safety).
  - Implement safety practices such as Internal Responsibility System (IRS), Job Task Observations.
  - Conduct risk assessments.
- Management of change.
  - Understand and participate in development safety protocols and documents including but not limited to JHA, JHC.

TASK 5.4
UNDERSTAND, RESPOND TO AND REPORT EMERGENCIES

SUB-TASKS

1. Understand and properly respond to all emergencies.
2. Report all incidents/emergencies, as per company policies.
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 the 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).

UNDERGROUND MINER

Area of Competency 6: Energy Sources

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

TASK 6.1
LOCK OUT, TAG, DE-ENERGIZE AND TEST EQUIPMENT

SUB-TASKS

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).

TASK 6.2
WORK AROUND ENERGY SOURCES

SUB-TASKS

1. Understand and 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, overhead and underground services.

UNDERGROUND MINER

Area of Competency 7: Working at Heights

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

TASK 7.1
IDENTIFY, INSPECT AND STORE FALL PROTECTION SYSTEMS

SUB-TASKS

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

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

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

TASK 7.2
USE PERSONAL FALL ARREST SYSTEM

SUB-TASKS

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.

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.
- 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.

TASK 7.3
USE PORTABLE LADDERS

SUB-TASKS

1. Identify types, materials 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, materials, sizes and grades of ladders.
  - Extension ladders, step ladders.
  - Made of different materials: metal, fiberglass, 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 and remove 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.
  - Follow site specific ladder policy.
  - 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

SUB-TASKS

1. Ascend and descend scaffold or raised platform.
2. Verify and identify tag.
3. 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.
  - 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.

UNDERGROUND MINER

Area of Competency 8: Communicate

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

TASK 8.1
LISTEN ACTIVELY

SUB-TASKS

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

SUB-TASKS

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 open-ended questions to make sure directions were understood.

TASK 8.3
USE COMMUNICATION DEVICES

SUB-TASKS

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

SUB-TASKS

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

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Ensure visual contact.
  - Take signals from one person only.
  - Confirm signals.
- Use appropriate signals for the job.
  - Includes visual and audible (e.g., hand signals, light signals, horns, bells and whistles).
  - Includes signals for: lifting devices (cranes, cage, skip), tramming, conveyance, aircraft and helicopters.

TASK 8.5
USE WORKPLACE TECHNOLOGIES

SUB-TASKS

1. Use digital-based training modules.
2. Read and understand machine parameters.
3. Receive and follow dispatch instructions.
4. Use digital input services.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Use digital-based training modules.
  - Interactive digital program, simulators.
  - Enter and track training data.
- 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 (SDS, SOPs).
- Receive and follow dispatch instructions.
  - Dispatch screen (e.g., Modular, WENCO, Mine Star).
- Use digital input services.
  - Electronic forms, databases, Internet, e-mail.
  - Control and maintenance of Standard Operating Targets and Standard Operating Procedures.

TASK 8.6
COMPLETE WORKPLACE DOCUMENTATION

SUB-TASKS

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

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Use appropriate form.
  - Includes inspection checklists, logbooks, cross shift notes, shift reports, production reports, near miss reports, incident reports, safety system cards, time cards, training status reports.
- Be specific and timely.
  - Include accurate information, appropriate details and complete report in full and submit in a timely manner.

TASK 8.7
COACH OR MENTOR OTHER COWORKERS/PEERS

SUB-TASKS

1. Demonstrate proper technique.
2. Check for understanding.
3. Observe coworkers/peers.
4. Provide assistance and appropriate feedback.
5. Continue to observe/follow up.
6. Report to supervisors, if applicable.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- No additional references or examples.

UNDERGROUND MINER

Area of Competency 9: Be Professional

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

TASK 9.1
WORK IN A TEAM ENVIRONMENT

SUB-TASKS

1. Respect team members.
2. Be professional.

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).
  - 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.

TASK 9.2
WORK IN A CULTURALLY DIVERSE ENVIRONMENT

SUB-TASKS

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

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Respect practices of co-workers and local populations.
  - Be open-minded.
- Respect social differences.
  - Show interest in others (ask about work experience, family).
  - Be a role model for others.

- Support local businesses.
  - Buy supplies locally.

UNDERGROUND MINER

Area of Competency 10: Equipment Knowledge

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

TASK 10.1
DEMONSTRATE EQUIPMENT KNOWLEDGE

SUB-TASKS

1. Trained, qualified and authorized for proper use and operation of equipment.
2. Conduct pre-operational checks.
3. Properly mount and dismount equipment.
4. Start equipment.
5. Conduct operational checks.
6. Drive equipment to worksite, as required.
7. Shut down equipment (normal and emergency situations).
8. Conduct post-operational check.
9. Knowledge of refueling procedure.
10. Toggle controls to release stored energy.
11. Use appropriate ventilation supplies for operating.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Trained and authorized for proper use and operation of equipment.
  - Follow manufacturer's recommendations and specifications.
  - Follow safe operating procedures.
  - Know capabilities and limitations of equipment.
- Conduct pre-operational checks.
  - Inspect equipment for defects, hazards and potential hazards.
  - Identify and assess severity of equipment defects.
  - Take corrective action to restore normal equipment operation.
  - Record defect(s) and corrective action taken in logbook.
  - Damage to equipment.
  - Steering.
  - Test brakes, as per manufacturer's specifications.
  - Tires and undercarriage pre op check.
  - Know and understand fire suppression systems.
  - Bolts, keepers and holders.
  - Oil spills and/or excessive grease.
  - Pinion and ball gears.
  - Rope windows.
- Inspect layout of hoist.
  - Conveyance inspections.
  - Test all forms of communication – radio, bell phones, pager phones.
  - Mechanical, electrical and HMI (Human-Machine Interface).
- Properly mount and dismount equipment.
- Ensure equipment is shut down before exiting.
  - 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 logbook.
  - Fill out pre-operational check sheet.
  - Check gauges, consoles 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 – over wind, under wind, 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).
- Operate equipment.
  - Wear seatbelts.
  - Use appropriate warning lights and signals.
  - Test service and emergency brakes.
  - Follow designate travel routes.
  - Observe speed limit, traffic signs, traffic patterns and rights-of-way.
  - Operate machine controls smoothly.
  - 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.
  - Ground all equipment implements.
  - Shut off ignition and/or fuel supply.
  - Toggle controls to release stored energy.
  - 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 check.
  - Fill out logbook.

TASK 10.2
WORKING WITH MOBILE EQUIPMENT

SUB-TASKS

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

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 and stationary equipment.
  - Call before you dig.
  - Avoid debris resulting from work or movement of equipment.

TASK 10.3
WORK WITH STATIONARY EQUIPMENT

SUB-TASKS

1. Use appropriate personal protective equipment.
2. Avoid hazardous conditions.
3. Demonstrate knowledge of working in close quarters and around equipment.

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.
  - Avoid debris resulting from work or equipment.

UNDERGROUND MINER

Area of Competency 11: Protect the Environment

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

TASK 11.1
COMPLY WITH ENVIRONMENTAL POLICIES, PROCEDURES AND PERMITS

SUB-TASKS

1. Minimize environmental impact of operations.
2. Follow appropriate handling and clean-up procedures for various substances.
3. Comply with environmental policies.

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 logbook.

TASK 11.2
APPLY SPILL CONTAINMENT MEASURES

SUB-TASKS

1. Identify when containment is required.
2. Know and select appropriate type of containment.
3. Install containment, as per company policies.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Identify when containment is required.
  - Containment is required for the storage and handling of fuel, cuttings, hazardous materials, liquid and solid wastes.
- Select appropriate type of containment.
  - Types of containment include straw, berms, pits, portable plastic containers, ditches, silt fencing, secondary containers of required dimensions.
  - Match type of containment to the area and material being contained.
- Install containment.
  - Install containment best suited to material being contained (fuel drum inside another secondary container, fuel tank inside a berm, double-walled fuel tanks).

TASK 11.3
MANAGE WASTE

SUB-TASKS

1. Select and use appropriate PPE.
2. Identify type of waste.
3. Manage solid waste.
4. Manage liquid waste.
5. Manage recycling waste.
6. Manage biohazard waste.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Select and use appropriate PPE.
- Identify type of waste.
  - Identify generated waste including solid, liquid and recycling.
  - Identify the need to set up waste management measures.
  - Select appropriate type of waste management measures.
  - Follow waste management policies and procedures.
  - Adhere to applicable environmental legislation and regulations.
- Manage solid waste, as per company policies and regulations.
  - 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, company policies and regulations.
  - Includes sludge, cuttings, waste oil.
  - Select compatible disposal equipment.
  - 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, company policies and regulations.
  - Cardboard, scrap metal, empty fuel drums, empty propane tanks and unused lumber must be salvaged and recycled.
- Manage biohazard waste, company policies and regulations.
  - Comply with WHMIS, if applicable.

TASK 11.4
MANAGE FUELS AND OTHER HAZARDOUS MATERIALS

SUB-TASKS

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 for to transport dangerous goods (TDG) and WHMIS.
  - Ensure proper permits are in place.
  - Check bills of lading against supplies.
  - Use appropriate types and sizes of containers to transport hazardous materials.

TASK 11.5
RESPOND TO SPILLS

SUB-TASKS

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

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Assess danger.
  - Halt operations.
  - Identify substance.
  - Determine 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 spill reporting procedures.
- Notify supervisor.
  - Notify proper authorities (Spill Line).
  - Complete required documentation (Spill Report form).

UNDERGROUND MINER

Area of Competency 12: Operate Support Equipment

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

THE FOLLOWING PRINCIPLES APPLY TO ALL TASKS UNDER THIS AREA OF COMPETENCY

- Adhere to Area of Competency 10 – Equipment Knowledge
- Adhere to Task 3.4 - Recognize and comply with traffic management plans
- Adhere to Task 8.4 - Convey message using signals
- Adhere to operating manuals and manufacturers' specifications/recommendations

TASK 12.1
OPERATE LIGHT OR SERVICE VEHICLE

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Ensure proper housekeeping of vehicle.
3. Load, transport and unload materials, supplies and/or personnel.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Ensure proper housekeeping of vehicle.
  - Keep vehicle free from clutter.
  - Ensure vehicle is equipped with appropriate equipment including but not limited to; first aid kit, survival kit, spill kit, fire extinguisher, wheel chalk.
- 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.
  - Follow procedures when: towing trailers/carriers to transport materials (capacity, transporting materials on board, positioning and fastening).
  - Secure loads.

TASK 12.2
OPERATE UTILITY VEHICLES

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Move equipment and materials.
3. Transport personnel.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Check for emergency equipment (ABC fire extinguisher, first aid kit, vehicle permit, tool kit).
  - Boom truck.
  - Ensure fire suppression equipment, if required.
- Move equipment and materials.
  - Do not overdrive headlight while driving.
  - Follow load limitations.
  - Take precautions at ramps, corners and intersections.
  - Follow procedures when towing trailers/carriers to transport materials (capacity, transporting materials on board, positioning and fastening).
  - Follow explosive management plan.
- Transport personnel.
- Ensure protection of self and others.

TASK 12.3
OPERATE FUEL OR LUBE TRUCK

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Transfer fuel and lube to equipment.
3. Load fuel or lube truck.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Ensure no smoking or open flame in and/or around vehicle.
  - Visually inspect chassis and attachments to verify integrity of tank.
  - Confirm presence of warning placards for dangerous goods.
  - Observe load limitations.
- Transfer fuel and lube to equipment.
  - Approach equipment with operator in full view.
  - Ensure equipment has been stopped/parked and attachments grounded.
  - Ensure non-movement of vehicle while transferring.
  - Ensure proper hook-up of equipment.

TASK 12.4
OPERATE WATER TRUCK

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Control dust on roads and ramps.
3. Wash roads and walls.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Ensure water tank is full.
  - Observe load limitations.
  - Refill tank as required.
- Control dust on roads.
  - Ensure ramps/roads are not excessively watered.

TASK 12.10
PERFORM TRACK HAULAGE

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Perform track inspection.
3. Plan and prepare for track haulage operations.
4. Set up remote operation, if applicable.
5. Conduct remoting, if applicable.
6. Haul material.
7. Load and unload train.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Isolate locomotive.
  - Unhook trolley/motor from train and secure parked cars.
  - Understand and inspect site specific energy sources (batteries, charging stations, diesel power, fuel, air and waterlines).
- Plan and prepare for track haulage operations.
  - Receive, interpret and clarify shift changeover line-up details.
  - Inspect and assess site conditions to determine if scaling is required.
  - Take action according to site requirements.
  - Ensure area is well ventilated before entering.
- Set up remote operation, if applicable.
  - Ensure transmitter functions are operating correctly.
  - Ensure communication device is available for operator at all times during operation.
  - Ensure receivers are operational.
  - Ensure proximity devices or other safety devices are operational.
  - Wear or position remote controls in a safe location.
- Conduct remoting, if applicable.
  - Follow appropriate operating distance and safety procedures.
  - Continuously assess ground conditions and determine safest operating method and efficiency of operations.
  - Store remote controls in a secured location when not using.
- Haul material.
  - Maintain control and operate locomotive safely within work environment, capacity and limitations.
  - Monitor and manage locomotive performance using appropriate indicators to aid efficient operations.
  - Utilize approved signaling and switching system operations to transport load efficiently and safely to specified destination.
  - Follow explosive management plan.
- Load and unload train.
  - Switch locomotive to remote operations.
  - Accurately position cars underneath material loading chute/ loading point.
  - Load and unload train using approved equipment.
  - Monitor and manage material flow using appropriate indicators.

TASK 12.11
PERFORM CAGE TENDER DUTIES

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Organize cage operations.
3. Load and unload cage.
4. Follow explosive management plan.
5. Knowledge of emergency procedures.
6. Perform cage maintenance and complete logbook.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Organize cage operations.
  - Receive, interpret and clarify shift line-up details.
  - Daily inspection.
- Load and unload cage.
  - Understand accepted cage signal codes.
  - Transport personnel.
  - Load cage within capacity and in compliance with specified limits.
  - Ensure that loads in, or attached to, cage are positioned and secured before transit.
  - Monitor and manage cage performance using appropriate indicators to aid safe operations.
  - Chain and unchain cage if applicable.
  - Unload cage as required.
  - Ensure area is clear of personnel during loading and unloading.
- Follow explosive management plan.
  - Identify explosives management plan.
  - Use appropriate instructions verifying explosives are on deck.
  - Notify appropriate personnel of movement of explosives.
  - Determine and ensure segregation and separation of detonators and explosives.
  - Secure and transport blasting agents and explosives.
  - Track and record movement of explosives and detonators.
  - Deliver explosives to destination without delays.

TASK 12.13
PERFORM SKIP TENDER DUTIES

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Organize skip operations.
3. Load and unload skip.
4. Remove blockages.
5. Conduct end-of-shift activities.
6. Remove scrap material.
7. Perform skip maintenance and complete logbook.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Operate skip safely in working environment with regard to site conditions.
  - Monitor and manage skip performance using appropriate indicators to aid safe operation.
  - Ability to identify contaminants, follow skip shut-down procedures, remove or dispose of contaminants.
  - Knowledge and understanding of LOTO procedures.
- Organize skip operations.
  - Receive, interpret and clarify shift line-up details.
- Load and unload skip.
  - Load skip according to specifications and policies and procedures.
  - Identify blockage.
  - Confirm location and nature of blockage.
- Remove blockages.
- Use safe practices according to site policies and procedures.
- Perform skip maintenance and logbook.
  - Wash skip.
  - Identify and report any required repairs.
- Complete operator's report.

TASK 12.14
CONDUCT SHAFT INSPECTION AND MAINTENANCE

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Inspect the shaft furnishings and walls.
3. Maintain the shaft.
4. Maintain services.
5. Operate the lifting mechanism(s).
6. Complete shaft maintenance.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Knowledge of principal components including the hoist rope and attachments, dogs, level locks/chairs, conveyance doors, bars, wheels and stop blocks.
- Inspect the shaft.
  - Operate audio and/or visual communication systems.
  - Inspect chairing and shaft components.
  - Observe loose material located on concrete pour matchers, service clamps or steel installation inside the shaft.
  - Check for damage/defects including ground support, damage to furnishings/fasteners.
  - Inspecting shaft dividers, support timber/steel, shaft doors, skip skrolls and limit switches.
  - Check for damage/defects or obstruction of safety devices, including sensors and switches.
  - Check for damage/defects to shaft services, including cables, pipe and ducting.
  - Observe there is adequate air flow and no harmful gas readings, particularly during re-entry.
  - Communication and recording of observed issue and its location.
- Maintain the shaft.
  - Replacing shaft components and timber/steel including end/wall plates, posts, dividers, hanging rods and brattice/tight lining.
  - Removing, lowering, placing, securing and aligning guides.
  - Maintain water rings and catch pits, replacing bell cord and the signaling device.
- Maintain services.
  - Including but not limited to; compressed air lines, water lines, pump discharge lines, electric cable hangers, sand/concrete/slime feed lines and communications lines.
- Operate the lifting mechanism(s).
- Complete shaft maintenance.
  - Removing and storing equipment and tools in the designated/approved areas.
  - Releasing the conveyance.
  - Completing log entries.

TASK 12.15
OPERATE SKID STEER

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Knowledge of limitations.
3. Load and unload materials/supplies safely.

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.
  - Use spotter with proper equipment.
  - Ground equipment on shut down.
- Knowledge of limitations.
  - Do not exceed limitations.
  - Use appropriate equipment attachments.

TASK 12.16
OPERATE FORKLIFT

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Knowledge of limitations.
3. Transport materials and equipment.
4. Identify load landing area.
5. Unload materials and equipment.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Lower forks to ground when parked.
  - Understand center of gravity.
- Knowledge of limitations.
  - Do not exceed limitations.
- Transport materials and equipment.
  - Know weight of load and do not exceed limitations of forklift.
  - 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 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.

TASK 12.17
OPERATE ELEVATED WORK PLATFORM

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Set up elevated work platform.
3. Work from platform.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Ensure proper use of PPE.
  - Fall arrest certification, up to date.
  - Knowledge and understanding of rescue plan.
  - Includes scissor lift, boom lift (straight or articulated).
  - Cycle elevated work platform using lower controls to check holding valve operation.
  - Assess safety and condition of personnel bucket/platform.
  - Secure lifting device.
  - Lower boom to rest position.
  - Raise stabilizer legs.
  - Install boom and bucket covers in preparation for travel.
- Set up elevated work platform.
  - Choose firm base in a suitable position for maximum job efficiency.
  - Load and secure tools, materials and supplies in bucket.
  - Ensure clearance for movement of self, bucket/platform and ropes when raising/lowering equipment, materials and supplies with ropes.
  - Observe limits of electrical approach.
- Work from platform.
  - Operate upper aerial controls to access work position.
  - Adjust safety harness.
  - Work within personal physical limits and equipment limits.

TASK 12.18
OPERATE SLUSHER

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Set up slusher.
3. Complete slusher operation.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Identify usage of air or electricity two- or three-drum slusher.
  - Identify operational function of major components.
- Set up slusher.
  - Use timber posts or laggings, or chains or cables.
  - Make platform using planks or other flat timber to prevent slusher from sinking into muck.
  - Install guard in front of slusher.
  - Assemble components, ensuring all connections are secure.
  - Ensure cables are on correct drum.
  - Ensure anchors are secure.
  - Hook up either air or electric slusher to power supply.
  - Ensure rollers are free-turning.
  - Check brake band adjustment, adjust if necessary.
- Complete slusher operation.
  - Cover all open holes.
  - Position slusher where it will not obstruct travel and will be safe from blasting damage or from falling muck.
  - Hang cable out of the way.
  - If slushing is completed, take down and store all pulleys and roll up any slack cable.
  - Deactivate power (air/electrical).
  - Properly pile up any scrap taken out of muck.

TASK 12.19
OPERATE ROCK BREAKER

SUB-TASKS

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

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.
  - Operate machine controls smoothly (with joystick, if applicable).
  - 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.
  - Build cove with material, when possible.
  - Position excavator for optimum work pattern.
  - Identify when to change pin size.
  - Use approved dust suppression methods.
  - Follow pre-operational and safe operational procedures.

TASK 12.20
OPERATE ALL-TERRAIN VEHICLES

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Move equipment, materials and personnel.
3. Transport all-terrain vehicle.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Identify hazardous or potentially hazardous conditions (during spring and fall conditions, avoid and not create avoid heavily rutted trails/road, on hills, watch for tip-over risks, on blind hills and curves, water flows, extreme weather conditions, unsuitable ground/ice conditions, ground conditions of access to and from location).
  - Ensure use of proper PPE and seatbelts.
  - Do not overdrive headlight.
- Move equipment and materials.
  - Ensure vehicle permit, proof of insurance and valid driver's license are all with the vehicle, when applicable.
  - Inform responsible person of travel plan (departure and estimated return time and route).
- Transport all-terrain vehicle.
  - Follow procedures when loading and unloading onto trailer or pick-up truck.
  - Follow procedures when towing trailers/carriers to transport materials (capacity, transporting materials on board, positioning and fastening).

TASK 12.23
OPERATE DEWATERING/THICKENING SYSTEMS

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Monitor reagent systems.
3. Knowledge of water management plan.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Includes stock tanks, decanters, pumping systems, sampling systems, rakes, drive system, feed wells.
  - Check shell, rakes (height, torque, integrity), motor and gear box, U/F pumps and density, flow rates, water supply, motion detectors, monitoring devices, piping.
  - Knowledge and understanding of lock out tag out procedures.
  - Follow communication procedures regarding interlocking systems.
- Monitor reagent systems.
  - Ensure system contains proper amount, type and strength of reagents.
  - Measure quantities of reagents.
- Knowledge of water management plan.
  - Follow government environmental and legislated policies and procedures.

TASK 12.24
OPERATE PUMPS

SUB-TASKS

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, signer valves, check valves).
  - Place equipment at predetermined location(s).
  - Lock out, tag out (LOTO).
  - Secure pump and discharge lines.
  - Screen intake.
  - Verify discharge.
- Monitor pump operation.
  - 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).
  - De-energize lines.
- Switch pumps.
  - Switch to stand-by pump.
  - Open and close valves slowly and accurately.
  - Do not over tighten.

TASK 12.25
OPERATE MIXERS

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Knowledge of plugged lines.
3. Conduct operational procedures.
4. Ensure proper maintenance to unit.
5. Proper storage of unit.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Set up mixer ensuring it is secure and on a flat level base.
  - Includes prop, arbour, submergible, venture, colloidal, paddle.
- Conduct operational checks.
  - Check for vibrations.
  - Monitor to ensure that all fittings are tight while in use and in storage.
  - Ensure proper guarding is in place.

TASK 12.27
OPERATE SEWER TRUCK

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Conduct operational checks.
3. Dispose of waste.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Ensure proper use of PPE.
  - Observe load limitations.
  - Refill tank as required.
- Dispose of bio-hazard waste.
  - Ensure proper chemicals are pumped in.
  - Ensure waste is properly disposed of according to site policies and procedures.

TASK 12.28
OPERATE ROAD HEADER

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Trainer and authorized for proper use and operation of equipment.
3. Check ventilation systems.
4. Inspect equipment for defects, hazards and potential hazards.
5. Check all electrical couplings for proper fastening.
6. Check and test remote unit for fail safe operation.
7. Line up to face using surveyed parameters.
8. Inspect area conditions when leaving work area.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
- Trained and authorized for proper use and operation of equipment.
  Follow manufacturer's recommended procedures.
  - Follow safe operating procedures.
  - Know the capabilities of and limitations of equipment.
  - Understand the functions of the equipment.
- Check ventilation systems.
  - Check vent ducting for damage and holes.
  - Check fans are running and free of damage.
- Inspect the equipment for defects, hazards and potential hazards.
  - Identify and assess severity of equipment defects.
  - Take corrective action to restore normal operation.
  - Record defect and corrective action taken in logbook.
- Check all electrical couplings for proper fastening.
  - Ensure zero energy state before any checks.
  - Visually check all couplings to make sure proper fastening.
  - Ensure all electrical couplings are locked and secured.
- Check and test remote unit for failsafe operation.
  - Test remote unit for all functions.
  - Hands off remote test (deadman switch).
  - Tilt remote unit to make sure equipment will shut down.
  - Emergency remote shutdown test.
  - Check fire suppression system activation is protected.
- Line up to face using surveyed parameters.
  - Inspect, clean and test guidance systems.
  - Download new advance codes.
- Inspect area conditions when leaving work area.
  - Check ground conditions when leaving work area.
  - Inspect ground control support for proper installation.
  - Report any abnormal conditions to proper personnel.

TASK 12.29
OPERATE CONTINUOUS DRUM MINER

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Operate continuous miner.
3. Monitor operations.
4. Identify and correct problems.
5. Tram the miner.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Conduct pre-operational check.
  - Conduct operational check.
- Operate continuous miner.
  - Sump in and cut in correct sequence.
  - Control advance rate and loading rate.
  - Coordinate with movement of shuttle car, load shuttle car.
  - Reposition miner.
  - Recognize geological features which would limit cut depth or width.
- Monitor operations.
  - Ensure dust suppression works effectively.
  - Maintain dust extractor.
  - Ensure cable safety.
  - Work from a safe location, monitor gas, maintain accurate road dimensions.
  - Maintain road alignment.

- Identify and correct problems.
  - Recognize cutting problems due to pick wear.
  - Maintain fluid levels.
  - Replace exposed/broken hoses as required.
  - Replace dust filters and spray nozzles.
  - Recognize auxiliary ventilation deficiencies and procedure to make corrections.
- Tram the miner.
  - Prepare to tram to new location.
  - Organize cable.
  - Clear obstacles.

TASK 12.30
OPERATE SHUTTLE CAR

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Operate shuttle car.
3. Monitor operations.
4. Identify and correct problems.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Conduct pre-operational check.
  - Conduct operational check.
- Operate shuttle car.
  - Understand track and trackless shuttle cars.
  - Properly restrain cable at backlash, coordinate with miner operator for loading.
  - Coordinate with other car drivers for efficient coal clearance.
  - Be aware of obstacles and manpower in the roads.
- Monitor operations.
  - Monitor machine conditions.
- Identify and correct problems.
  - Recognize effects of poor road conditions and have them corrected.

TASK 12.31
OPERATE FEEDER BREAKER

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Operate feeder and breaker.
3. Monitor operations.
4. Identify and correct problems.
5. Tram the feeder breaker.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Conduct pre-operational check.
  - Conduct operational check.
- Operate feeder breaker.
  - Sprag or otherwise secure properly in working positions.
  - Operate feeder and breaker.
  - Operate and maintain water sprays.
  - Use approved dust suppression methods.
- Monitor operations.
  - Monitor dust suppression, pick wear, throughput and alignment with main belt.
- Identify and correct problems.
  - Clear debris at the throat.
  - Maintain good access.
  - Keep area clean.
  - Monitor ventilation.
- Tram the feeder breaker.
  - Prepare to tram to new location, organize cable.
  - Clear obstacles.

TASK 12.32
OPERATE AROUND LONGWALL FACE

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Operate longwall face.
3. Monitor operations.
4. Identify and correct problems.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Conduct pre-operational check.
  - Conduct operational check.
- Operate longwall face.
  - Operate shearer/plough.
  - Draw coal in correct sequence if LTCC practiced.
  - Maintain face alignment.
  - Maintain mining rate under heavy roof.
  - Pre-plan maintenance operations.
- Monitor operations.
  - Monitor cave, face alignment and support at gate ends.
  - Ensure dust suppression sprays are operating.
  - Monitor gas conditions.
- Identify and correct problems.
  - E.g., cutting problems due to pick wear, maintain fluid levels.
  - Replace exposed/broken hoses as required.
  - Replace dust filters and spray nozzles.

UNDERGROUND MINER

Area of Competency 13: Operate Heavy Equipment

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

THE FOLLOWING PRINCIPLES APPLY TO ALL TASKS UNDER THIS AREA OF COMPETENCY

- Adhere to Area of Competency 10 – Equipment Knowledge
- Adhere to Task 3.4 - Recognize and comply with traffic management plans
- Adhere to Task 8.4 - Convey message using signals
- Adhere to operating manuals and manufacturers' specifications/recommendations

TASK 13.1
OPERATE HAULAGE TRUCK

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Demonstrate emergency systems.
3. Position truck for loading.
4. Haul loads.
5. Dump loads.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Ensure clear path for truck movement.
  - Check site for surface cracks, berm height or any potential hazards.
- Position truck for loading.
  - Be aware of hazards i.e., overhead, electrical, tubing, pipe, services.
  - Position according to various loading equipment i.e., electric shovel, hydraulic shovel, loader, backhoe.
- Haul loads.
  - Be aware of hazards i.e., overhead, electrical, tubing, pipe, services.
  - Be aware of pedestrians.
  - Proper braking systems and procedures for ramps.
  - Drive according to road conditions.
  - Prevent and report spillage according to policies and procedures.
- Dump loads.
  - Lower and secure box.
  - Drive with box down.
  - Position accordingly to various dumping scenarios and company policies and procedures i.e., spotter, no spotter, berms, hopper, stockpile.

TASK 13.2
OPERATE UNDERGROUND LOCOMOTIVES

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Move equipment and material.
3. Starting locomotive.
4. Braking.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Types include diesel, battery operated, trolley.
  - Do not carry loose objects, operate with loose clothing or unlaced footwear.
- Move equipment and material.
  - Transport materials on appropriate type of car, e.g., flat car.
- Starting locomotive.
  - Ensure proper air pressure.
- Braking
  - Know and use proper hand and dynamic braking techniques.

TASK 13.3
OPERATE MUCKING EQUIPMENT

SUB-TASKS

1. Identify various types of mucking equipment and their applications.
2. Demonstrate equipment knowledge.
3. Set up mucking equipment and location.
4. Scrape material.
5. Load muck.
6. Haul muck.
7. Dump material.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Identify various types of mucking equipment and their applications.
  - Small truck mucking machine.
  - Large truck mucking machine.
  - Small rubber-tired mucking machine.
  - Large rubber-tired mucking machine.
  - Shaft mucking machine (Vertical Shaft Mucker)
- Set up mucking equipment.
  - Install safety chain.
  - Install air hoses, ensuring hose retainer (whip-check) is on.
  - Take out centering pin.
  - Take out bucket pin.
- Scrape material.
  - Stop scraper to break large pieces of muck; if pieces cannot be broken, they must be blasted according to company procedures.
  - Pull out scrap material and pile it out of the way for subsequent disposal.
- Load muck.
  - Examine muck pile for protruding objects.
  - Back up and turn machine off when explosives are encountered in muck. Remove any detonators or explosives from muck, dispose of explosives following policy and procedures.
  - Position vehicle in correct location.
  - Lower bucket when machine is not operating.

TASK 13.4
OPERATE REMOTE CONTROLLED LHD (LOAD HAUL DUMP)

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Set up remote mucking area.
3. Check remote transmitter/receiver.
4. Muck with remote controlled LHD.
5. Store remote transmitter/receiver.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Set up remote mucking area.
  - Ensure that safe mucking setup is in place as per company procedures (mucking pad, deflector, signage, warning lights and signs, barricades, dust suppression and roadway conditions as applicable).
- Check remote transmitter/receiver.
  - Verify functions in secure area ensuring that no personnel are in danger area and that all functions are working properly including braking and safety devices.
- Muck with remote controlled LHD.
  - Operate from safe mucking setup as per company procedures.
  - Ensure no personnel are in danger area.
- Store remote transmitter/receiver.
  - Store as a set-in designated area to prevent damage or moisture contamination.

TASK 13.6
OPERATE GRADER

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Raise, lower and adjust attachments/implements.
3. Demonstrate proper grading techniques.
4. Ditching.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Raise, lower and adjust attachments/implements.
  - Adjust attachments/implements to within parameters of the machine.
- Demonstrate proper grading techniques.
  - Fill in holes.
  - Remove oversized chunks.
  - Maintain roadway with ballast.
  - Picking up a windrow and/or spreading a windrow according to site policies and procedures.
- Ditching.
  - Demonstrate proper ditching techniques according to circumstances.
  - Maintain proper slope.
  - Maintain windrows.

TASK 13.9
OPERATE PRODUCTION LOADER

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Loading.
3. Travelling/tramming.
4. Transport equipment and/or supplies.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Raising and lowering bucket.
  - Push plate.
  - Tilting and tipping bucket.
  - Selecting correct gear for given operation.
  - Lower attachments to ground.
- Loading.
  - Knowledge of material to be loaded.
  - Use proper techniques to load material for transport.
- Travelling/tramming.
  - Ensure bucket is in safe transporting condition.
  - Maintain floor and carry load at appropriate height.
- Deliver equipment and/or supplies.
  - Ensure proper roadway conditions.
  - E.g., ground support, power supplies, service, pipes, electrical.

TASK 13.10
OPERATE HYDRAULIC EXCAVATOR OR BACKHOE

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Knowledge of face prep and explosive procedures.
3. Dig, swing, dump.
4. Conduct loading into a hauling unit.
5. Perform ditching and sump construction.
6. Conduct ripping as needed.
7. Live pile management.
8. Box cleaning.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Inspect boom, stick and bucket pins, bucket stick and bucket hydraulics.
  - Lower attachments to ground.
  - Drain air tanks.
- Dig, swing, dump.
  - Utilize proper operating technique.
- Conduct loading into a hauling unit.
  - Bench load, same level load.
- Perform ditching and sump construction.
  - Follow grade.
  - Spoil pile placement.
  - Use appropriate side slope according to materials and regulations.
- Conduct ripping as needed.
  - Hard or frozen materials.
- Live pile management.
  - Follow policies and procedures.
  - Angle of repose.
  - Dig in known areas (locates and permits).
- Box cleaning.
  - According to site policies and procedures.

TASK 13.14
OPERATE ROTARY OR HAMMER DRILL

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Load on and off float.
3. Drill to engineered pattern design.
4. Cable management.
5. Change bits and stabilizers.
6. Sampling.
7. Record keeping.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Inspect for high walls or crests.
  - Pull steel from ground.
- Load on and off float.
  - Follow appropriate procedures.
- Drill to engineered pattern design.
  - Understand previous blasted grounds.
  - Remote drilling procedures as per company policies, procedures and regulations.
  - Knowledge of deviations.
  - Reading monitors and screens (GPS).
  - Keep pattern square.
- Cable management.
  - Position of cable stands.
  - Properly marked cables.
  - Ensure proper placement of trailing cable.
- Change bits, steels and stabilizers as required.
  - Document appropriate information such as reason for failure, serial number, etc.
- Sampling
  - Collect and document sample as per site policies and procedures.
- Record keeping.
  - Identify and verify hole according to plan.
  - Record hole characteristics such as hardness, time to drill as required by site policies and procedures.

TASK 13.15
OPERATE LHD (LOAD HAUL DUMP)

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Muck with LHD.
3. Maintain roads.
4. Towing.
5. Move materials.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Muck with LHD.
  - Ensure that mucking setup is in place as per company procedures (wash and scale, mucking pad, clean sumps, deflector, signage, warning lights and signs, barricades as applicable).
  - Perform work as per site and company policies and procedures.
  - Operate mucking setup as per company procedures ensuring that no personnel are in danger area.
- Maintain roads.
  - Clean up sides, off set tracks, bring ballasts, back blade.
- Towing.
  - Inspect cables and devices, ensure proper anchor points, cross cables.
  - Perform work as per site and company policies and procedures.
- Move materials.
  - Scrap metal, ballasts, timber, supplies, belts, etc.

TASK 13.16
OPERATE UNDERCUTTER

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Line up to face.
3. Perform cutting.
4. Change bits.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Starting and tramming.
  - Braking.
  - Stabilizing.
  - Handle cable.
  - Parking and shutdown.
- Line up to face.
  - Ensure pillars are correct size and in proper place.
- Perform cutting.
  - Identify misholes and proceed according to site policies and procedures.
  - Ensure required thickness of floor.
  - Sump in as required.
  - Use approved dust suppression methods.

TASK 13.17
OPERATE MECHANICAL SCALER

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Be aware of surroundings.
3. Scale.
4. Rope off or barricade and report areas that are not completely scaled.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Set up and inspect back, roof and walls for slabs.
  - Always be prepared for unexpected slabs that could fall.
- Scale
  - According to company procedures.
  - E.g., scale from good ground to bad ground.

UNDERGROUND MINER

Area of Competency 14: Use Hand and Power Tools

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

TASK 14.1
DEMONSTRATE HAND AND POWER TOOL KNOWLEDGE

SUB-TASKS

1. Select appropriate PPE.
2. Trained in proper use and application of hand and power tools.
3. Inspect tool for defects/damages.
4. Maintain tools.
5. Store tools.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Train 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.
  - Tether tools when working at heights.
  - Assemble and adjust hand tools according to manufacturer's recommendations.
  - Follow procedures for start-up, operation, shutdown, 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 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.
  - Ensure battery maintenance.
- Store tools.
  - Store in appropriate designated place.

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

SUB-TASKS

1. Demonstrate tool knowledge.
2. Select appropriate tool.
3. Select appropriate PPE.
4. Use tool.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate tool knowledge.
  - Ensure trained in proper use and application of tool.
  - Use proper extension cords, pneumatic hoses and secure them in safe location.
  - Safety practices when using hydraulic.
  - Inspect extension cords before using.
  - Inspect batteries and battery chargers.
  - Use ground fault protector including draining air and waterlines before disconnecting.
  - Ensure proper PPE.
  - 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.
  - Ensure batteries are replaced on the chargers.
- Select appropriate tool.
  - Includes air grinder, air lights, generators, chainsaws, hydraulic tools (jacks, air tugger, winch).
  - Clean tools according to manufacturer's instructions.

TASK 14.3
OPERATE GROUTING EQUIPMENT

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Select and inspect grouting equipment.
3. Use specialized PPE, as required.
4. Perform grouting.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Select grouting equipment.
  - Includes pump, pressure rated hoses, plugs, grout type, additives.
  - Knowledge of emergency response procedures.
- Perform grouting.
  - Prepare grout mixture, including cement, chemicals, water, additives.
  - Mix to prescribed ratios.
  - Install grout plugs when required.
  - Pump grout mixture into the hole as specified.
  - Flush grouting system.

TASK 14.4
OPERATE CHAINSAWS

SUB-TASKS

1. Demonstrate tool knowledge.
2. Use specialized PPE, as required.
3. Operate chainsaw.
4. Conduct post-op inspection and proper storage.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate hand and power tool knowledge.
  - Understand and select appropriate chainsaw (e.g., air, electric, battery).
  - Timbers.
- Wear proper specialized PPE.
  - Including but not limited to: chaps, face shield, gloves.
- Cut, back-cut, fall, de-limb trees.
  - Watch for dangerous trees or limbs (“widow-makers”), if applicable.
  - Cut timber to size.

TASK 14.5
OPERATE CUTTING TORCHES

SUB-TASKS

1. Obtain site specific certifications.
2. Select cutting torch.
3. Demonstrate equipment knowledge.
4. Prepare the work area.
5. Transport bottles to work area.
6. Cut and dispose of material.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Select cutting torch.
  - Obtain proper tools and safety equipment.
- Demonstrate hand and power tool knowledge.
  - Ensure connection points are free of any dirt or oils, gauges are in proper working order, check valves are at both ends of hoses, proper pressure settings for oxygen and acetylene are known, acetylene gauge requires gasket at connection, check system for any leaks, use proper technique to light torch.
  - Knowledge and understanding of flashbacks.
  - Determine proper tip size for material being cut, proper spark lighter to light torch, proper position to perform cutting.
  - Perform post-work fire checks.
  - Must be able to shut off oxygen and acetylene to cutting heads and tanks, purge hoses and cutting heads, remove cutting head, hoses and gauges from tanks, install proper caps on tanks.
- Prepare the work area.
  - Acquire “hot work permit”, as required.
  - Ensure there are no explosives in area, remove flammable material, check area where sparks may fall, ensure proper ventilation in area.
- Transport bottles to work area.
  - Ensure bottles have proper caps, bottles must be in upright position, bottles must be properly secured.

TASK 14.6
OPERATE MOBILE GENERATORS

SUB-TASKS

1. Demonstrate equipment 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.
  - Use appropriate generator (e.g., diesel, gas, air, battery).
  - Set up equipment, ensuring it is secure and on a flat, level base.
  - Conduct pre-op inspection, if applicable.
  - Follow proper mine ventilation procedures.
  - Ground generator.

UNDERGROUND MINER

Area of Competency 15: Working Underground

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

TASK 15.1
MINE ENTRY MANAGEMENT (TAG IN TAG OUT)

SUB-TASKS

1. Report to supervisor.
2. Obtain tag and time worksheet.
3. Tag into appropriate workplace location.
4. Tag out at end of shift.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Report to supervisor.
  - To receive work instructions for day.
  - To receive information about workplace conditions.
  - Understand emergency procedures.
  - Do not move other workers tags.

TASK 15.2
INSPECT VENTILATION

SUB-TASKS

1. Inspect ventilation.
2. Report deficiencies.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Inspect ventilation.
  - Ensure area is ventilated before entering work area.
  - Use and monitor the appropriate gas detectors.
  - Inspect vent duct for rips and tears.
  - Identify location of doors, barricades and fans.
  - Ensure ventilation system is properly installed.
  - Inspect and maintain sufficient air flow.
  - Identify ventilation flow deficiencies.
  - Take corrective actions as required and according to company. standards and government regulations.
- Report deficiencies.
  - Report deficiencies to appropriate personnel.

TASK 15.3
MANAGE HAULAGE WAYS

SUB-TASKS

1. Plan and prepare for operations.
2. Grade site.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Plan and prepare for operations.
  - Select appropriate type of equipment according to job type and specifications to maximize efficiency and effectiveness of work activities.
  - Ensure area is well ventilated before entering.
  - Follow traffic management plan.
- Grade site.
  - Assess roadway conditions.
  - Grade site to achieve suitable hauling surface.
  - Use approved dust suppression methods.

TASK 15.4
INSPECT FOR WATER IN CHUTES AND HANG-UPS

SUB-TASKS

1. Identify water in chutes and hang-ups.
2. Identify and report repairs.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Identify water in chutes and hang-ups.
  - Perform visual inspection.
  - Immediately report deficiencies to appropriate personnel according to company policies and procedures.
- Identify and report repairs.
  - Check for abnormal conditions.
  - Immediately report deficiencies to appropriate personnel according to company policies and procedures.

UNDERGROUND MINER

Area of Competency 16: Scale Loose Rock

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

TASK 16.1
RECOGNIZE LOOSE OR ABNORMAL GROUND CONDITIONS

SUB-TASKS

1. Determine ground conditions.
2. Determine guarding and reporting procedures.
3. Take corrective actions.
4. Describe methods of ground control monitoring.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Determine ground conditions.
  - Identify geological structures including faults, slips, jointing, contacts, dykes, contacts, fracture system, folding.
  - Visually inspect for signs including deformation of drill holes, cracks, stress, ground movement, condition of ground support system, floor heaving, tracks shifting, fresh muck on floor.
  - Refer to history and communication in logbook/ground control.
  - Listen for rock noises (air blast, snapping or popping).
- Determine guarding and reporting procedures.
  - Isolate area according to company standards.
  - Report condition(s) to appropriate personnel.
- Take corrective actions.
  - Assess danger throughout drilling operation (stop drill and inspect conditions regularly (tap rock and listen to sound)).
  - Wash and scale loose rock.
  - Notify supervisor of situation that requires further investigation.
  - Communicate to local area workers about changing conditions.
- Describe methods of ground control monitoring.
  - Lay out and planning.
  - Specialized blasting.
  - Instrumentation (micro-seismic system, tape extensometers, stress metres).
  - De-stressing.
  - Numerical modeling.

TASK 16.2
RECOGNIZE FAULTY GROUND SUPPORT

SUB-TASKS

1. Describe ground support systems.
2. Determine when abnormal conditions are present.
3. Take corrective actions.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Describe ground support systems.
  - Includes bolting, timbering, cementing (shotcrete), backfilling, screening, strapping, cable bolting.
- Determine when abnormal conditions are present.
  - Visually inspect for signs including deformed plates, cracked cement, rock-filled and/or broken screens, cracked timber, dry rot, bulging screen, snapping/shredding bolts, corrosion.
  - Make inspection by sounding and listening for rock noise(s).
- Take corrective actions.
  - Scale loose rocks where applicable.
  - Recondition as needed.
  - Communicate to local area workers about changing conditions.
  - Isolate area according to company standards.
  - Notify supervisor of situation that requires further investigation.

TASK 16.3
WASH ROCK SURFACES

SUB-TASKS

1. Select correct hoses to suit specific application.
2. Demonstrate equipment knowledge.
3. Wash rock back and walls.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Select correct hoses to suit specific application.
  - Choose appropriate dimensions and length of hoses.
- Equipment knowledge
  - Fasten hoses to prevent leaks under static and dynamic working pressure.
  - Position hoses correctly.
  - Ensure hoses are not in contact with any equipment.
- Wash rock back and walls.
  - Ensure proper amount of water has been used.
  - Wash to minimize dust and expose rock fractures.
  - Wash rock according to site policies and procedures.

TASK 16.4
SCALE ROCK

SUB-TASKS

1. Select scaling bar.
2. Scale loose rock.
3. Maintain scaling bars.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Select scaling bar.
  - Select proper length of bar for specific task.
  - Check condition of bar for wear and tear, straightness, sharpness, rubber hand guard.
  - Use non-sparking tip in gas rich mine (e.g., methane).
  - Do not use worn bar.
- Scale loose rock.
  - Scale from good ground to bad ground.
  - Ensure good footing.
  - Ensure clear space behind for retreat.
  - Ensure scaled material has a safe bed to fall on.
  - Anticipate the size and movement of falling ground and stand clear.
  - Scale from a safe position.
  - Scale within one's physical limits (do not overreach, keep balance, maintain suitable working posture).
  - Sound ground for 'drummy' or solid ground conditions.
  - Scale from good ground to bad.
  - Take down all loose ground possible.
  - Continuously scale during task.
  - Watch for unexpected fall from back, face, pillar or wall.
  - Drop bar if control is lost.
  - Ensure other workers are positioned in a safe location.
  - Ensure lighting is adequate.
  - Ensure workplace is scaled at all times.
- Maintain scaling bars.
  - Keep scaling bars clean and sharp.
  - Discard any bent or chipped bars.

TASK 16.5
MECHANIZED SCALING

SUB-TASKS

1. Select equipment.
2. Scale rock.
3. Use proper technique.
4. Ensure proper road maintenance.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Select equipment.
  - Use site approved mechanical scaling equipment.
  - Use proper PPE for task.
- Scale rock.
  - Scrape walls and face.
- Use proper technique.
  - Scale from good ground to bad ground.
  - Be aware of surroundings.
- Ensure proper road maintenance.
  - Ensure retreat path.

UNDERGROUND MINER

Area of Competency 17: Perform General Services

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

TASK 17.1
KNOWLEDGE OF INSTALLATION AND MAINTENANCE SYSTEMS AND LINES

SUB-TASKS

1. Plan and prepare for installation of lines and systems.
2. Install lines and systems.
3. Conduct housekeeping activities.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Plan and prepare for installation of lines and systems.
  - Follow mine design and engineered drawings.
  - Select appropriate type of equipment according to job type and specifications.
  - Install lines and systems.
  - As per mine design and engineered drawings.
  - Isolate and lock out, de-energize and tag existing lines and systems.
  - Install hanging devices to secure to existing ground support mechanisms according to site standards.
  - Adding supporting mechanisms where appropriate.
  - De-isolate existing lines and systems.
- Conduct housekeeping activities.
  - Tear down, move and store tools and equipment in designated/approved areas.
  - Remove debris.
  - Recycle materials.

TASK 17.2
INSTALL AND MAINTAIN VENTILATION SYSTEMS

SUB-TASKS

1. Install and maintain systems and lines.
2. Install and maintain vent.
3. Remove vent.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Install and maintain systems and lines.
  - Use approved dust suppression methods.
  - Ensure area is ventilated before entering work area.
- Install vent.
  - As per mine design.
  - Check vent for correct operation.
  - Install proper length messenger cable according to site policies and procedures.
  - Install power cables between fans as required.
  - Replace and/or adjust vent as required.
  - Be familiar with heading de-gassing procedures.
- Remove vent.
  - Isolate and lock out, de-energize and tag ventilation devices.
  - Loosen and disconnect vent coupling mechanisms.
  - Properly dispose of tubbing/pipe.

TASK 17.3
INSTALL AND MAINTAIN AIR, WATER AND DRAIN LINES

SUB-TASKS

1. Install and maintain systems and lines.
2. Install air, water and drain lines.
3. Maintain air, water and drain lines.
4. Knowledge of water management plan.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Install air, water and drain lines.
  - Have hose or pipe laid out where needed.
  - Secure water/air handlers.
  - Operate lifting equipment.
  - Reactivate air and water.
  - Pressure reducing valves.
  - Identify abnormal conditions.
  - Lock out, de-energize and tag lines according to site policies and procedures.
  - Remove and secure all loose hanging chains.
- Maintain air, water and drain lines.
  - Identify, mark and report line leaks or breaks.
  - Replace defective section of line.
  - Ensure all connections are tight and secure.

TASK 17.4
EXTEND AND INSPECT ELECTRICAL AND COMMUNICATION LINES

SUB-TASKS

1. Perform visual inspection of electrical and communication lines.
2. Install and maintain systems and lines.

** Note: lines are only extended – hook-up is completed by qualified personnel.*

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Perform visual inspection of electrical and communication lines.
  - Check full length of line.
  - Ensure there are no broken or worn cables, connections are tight and secure, cable is properly supported or hung securely, properly coated hangers are used, ground fault interrupter system in machine is operational.

TASK 17.5
EXTEND FILL LINES

SUB-TASKS

1. Knowledge of fill lines and drawings.
2. Install and maintain systems and lines.
3. Maintain communication.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Knowledge of fill lines and drawings.
  - Follow mine design and engineered drawings.
- Install and maintain systems and lines.
  - Ensure proper lifting devices.
  - Monitor, inspect and secure clamps.
  - Lock out, de-energize and tag as needed.
- Maintain communication.
  - Notify back fill watchperson, where required.
  - Maintain pumps, berms and fill areas.
  - Maintain communications with back fill plant.

UNDERGROUND MINER

Area of Competency 18: Install Ground Support

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

THE FOLLOWING PRINCIPLES APPLY TO ALL TASKS UNDER THIS AREA OF COMPETENCY

- Adhere to Task 16.4 – Scale Rock

TASK 18.1
INSTALL GROUND SUPPORT

SUB-TASKS

1. Select type of ground support.
2. Install ground support.
3. Follow company ground control management plans (GCMP).

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Select type of ground support.
  - Identify standard types, sizes, lengths and functions of ground support including rebar, mechanical bolts, swellex and split sets using washers and mesh/screens, mesh, screen, cable bolts.
  - Determine required ground support and rock anchors for various applications.
- Install ground support.
  - Follow mine prints and standards to install and secure ground support, pattern, types.

TASK 18.2
FOLLOW ENGINEER FILL PLAN

SUB-TASKS

1. Knowledge and understanding of fill plan.
2. Organize filling activity.
3. Fill voids.
4. Monitor fill.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Knowledge and understanding of fill plan.
  - Plan and prepare work.
- Organize filling activity.
  - Select approved dust suppression and extraction methods.
  - Select appropriate type of equipment, materials and safety equipment for job type.
  - Install physical barricades and signs and/or safety provisions to prevent unauthorized entry of personnel and equipment.
- Fill voids.
  - Fill in controlled manner according to characteristics of fill.
- Monitor fill.
  - Manage and monitor drainage system.
  - Inspect bulkheads for faults, water flow and/or defects.
  - Monitor and manage dimensions of fill utilizing approved indicators.

TASK 18.3
STORE GROUND SUPPORT EQUIPMENT AND MATERIAL

SUB-TASKS

1. Store ground support equipment appropriately.
2. Proper care of storage facilities.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Store ground support equipment appropriately.
  - Includes bolts (tension or non-tension), pump, dollies, washers.
  - Store equipment in appropriate location (e.g., warm, dry, location for salt).

TASK 18.4
APPLY SHOTCRETE

SUB-TASKS

1. Interpret underground layout drawings for placement of shotcrete.
2. Select and maintain shotcrete pump.
3. Set up and operate shotcrete pump.
4. Place shotcrete.
5. Tear down, clean and store shotcrete pump.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Interpret underground layout drawings.
  - Determine type of shotcrete installation and layout (type of shotcrete to be applied, amount of shotcrete needed).
- Select shotcrete pump.
  - Move in shotcrete pumping equipment (pump, hoses, nozzle) and required safety equipment (e.g., dust masks).
- Place shotcrete.
- Ensure proper use appropriate, specialized PPE.
  - Inspect work area, install depth indicators (if required), install dust suppression system.
  - Ensure proper housekeeping.
  - Prepare working face, protect in-situ services (pipes, electrical cables, blasting cables, survey plugs, electrical panels).
  - Place shotcrete on face while maintaining proper nozzle distance from face, proper angle to face and proper consistency of shotcrete mix.
- Tear down and store shotcrete pump.
  - Clean shotcrete pump, hoses and nozzle.
  - Tear down equipment set-up.
  - Store shotcrete pump and equipment in designated storage area.

UNDERGROUND MINER

Area of Competency 19: Underground Construction/ Timberman

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

TASK 19.1
INTERPRET INSTALLATION LAYOUT DRAWINGS

SUB-TASK

1. Interpret installation layout drawings.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Interpret installation layout drawings.
  - Determine materials needed (dimensions, type).
  - Determine tools and equipment required.

TASK 19.2
CONSTRUCT FORMS AND PLACE CONCRETE/SHOTCRETE

SUB-TASKS

1. Interpret installation layouts, as per engineered drawings.
2. Prepare area for concrete/shotcrete.
3. Construct forms.
4. Provide concrete/shotcrete.
5. Place concrete/shotcrete.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Prepare area for concrete/shotcrete.
  - Determine and apply correct procedures to prepare an area for concrete/shotcrete including scaling to solid ground, cleaning, washing down, leveling area as required, use of blowpipe as required.
  - Ensure proper use appropriate, specialized PPE.
- Construct forms.
  - Determine and apply correct procedures for construction forms including location, specifications (size, shape, strength), bracing and sealing, reinforcing steel.
- Provide concrete/shotcrete.
  - Determine and apply correct procedures for providing concrete/shotcrete including strength and slump requirement, hand mixing, mechanized mixing, shotcrete.
- Place concrete/shotcrete.
  - Determine and apply correct procedures for placing concrete/shotcrete including hand piling, piping and blowing, pumping, pouring, vibrating, applying shotcrete.

TASK 19.3
CUT, FRAME AND INSTALL TIMBERS

SUB-TASKS

1. Cut and frame timber.
2. Install timbers.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Cut and frame timber.
  - Determine and apply the correct procedures to install timber according to layout including bulkheads, chutes, gangways, timber support sets, cribs, slide-type bulkheads, forming walls.
- Install timbers.
  - Follow engineered drawings.

TASK 19.4
FIT, ERECT AND INSTALL FABRICATED STEEL

SUB-TASKS

1. Fit, erect and install fabricated steel.
2. Follow proper lifting and rigging.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Fit, erect and install fabricated steel.
  - Determine and apply correct procedures according to layout to fit, erect and install fabricated steel including ore pass base/grizzly arrangements, door frames, slides, controls, pneumatic cylinders, ventilation infrastructure.
  - Determine oxy-acetylene cutting procedures.
- Follow proper lifting and rigging.
  - Follow company standards and legislation.
  - Follow hot work policies and procedures.
  - Ensure proper use appropriate, specialized PPE.

UNDERGROUND MINER

Area of Competency 20: Install Staging

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

THE FOLLOWING PRINCIPLES APPLY TO ALL TASKS UNDER THIS AREA OF COMPETENCY

- Adhere to company policies and procedures.
- Adhere to government legislations.
- Adhere to engineered drawings.

TASK 20.1
PLAN FOR STAGING

SUB-TASKS

1. Check mine prints, layouts and standards.
2. Determine type of staging.
3. Determine location.
4. Determine required tools.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Determine type of staging.
  - Select proper type of staging for specified application (wooden, steel, mechanical, pre-constructed, mobile).
  - Measure area for required materials.
  - Check access and egress access and muster areas.
  - Assess ground conditions.
  - Select location.

TASK 20.2
INSTALL, CONSTRUCT AND INSPECT STAGING

SUB-TASKS

1. Receive and store materials in staging area and work platforms.
2. Select required tools.
3. Construct or place staging.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Receive and store materials in staging area.
  - Includes timbers, planks, stabilizers, framing.
  - Deliver materials and timber to staging area.
  - Store materials and timber in preparation for staging.
  - Inspect components for defects or damage.
- Select required tools.
  - Select appropriate power and hand tools.
  - Demonstrate hand and power tool knowledge.
  - Follow working at heights policies and procedures, ensure certification is up to date.
- Construct or place staging.
  - Follow mine prints, layouts and standards for locating, securing, aligning and spacing staging.
  - Install temporary support posts.
  - Determine application of ladders, lagging, planks, legs, chains, guard-rails, toe rails, anchors and wings.
  - Set up warning signs, barriers, fall arrest systems.
  - Support staging using appropriate chains, muck pile and/or spraggs.
  - Place and attach ladders to ensure free access.

TASK 20.3
INSTALL, CONSTRUCT AND INSPECT MECHANICAL STAGING

SUB-TASKS

1. Demonstrate knowledge of inspecting and constructing staging.
2. Set up equipment.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Set up equipment.
  - Mechanized staging includes platform lift, scissor lift, loader, bucket elevator, forklifts, boom lift trucks, crane, raised climber, bucket loader.

TASK 20.4
REMOVE AND STORE STAGING

SUB-TASKS

1. Dismantle staging.
2. Move and store staging.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Dismantle staging.
  - Tear down staging using designated equipment.
- Move and store staging.
  - Move staging using designated equipment (scoops, service vehicles, trucks, manual means).
  - Store staging and equipment in pre-assigned area.
  - Ensure proper housekeeping.

UNDERGROUND MINER

Area of Competency 21: Conduct Lifting Operations

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

THE FOLLOWING PRINCIPLES APPLY TO ALL TASKS UNDER THIS AREA OF COMPETENCY

- Adhere to company policies and procedures.

TASK 21.1 PLAN LIFT

SUB-TASKS

1. Describe rigging, slinging and lifting equipment.
2. Demonstrate equipment knowledge.
3. Obtain authorization to conduct lift.
4. Select and use proper rigging/lifting equipment.
5. Trained in appropriate lift mechanisms and rigging programs.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Describe rigging and lifting equipment.
  - Includes non-mechanized and mechanized lifting equipment.
  - 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.
- Obtain authorization to conduct lift.
  - Establish daily logbook for overhead cranes.
- Select and use proper rigging/lifting equipment.
  - Follow engineered lifting plan.
  - Determine weight and center of gravity.
  - Ensure proper use of PPE.
  - Ensure clear path for load travel.
  - Store slinging equipment in designated/approved area.
  - Inspect equipment for defects.
- Trained in appropriate lift mechanisms and rigging programs.
  - Knowledge and understanding of rescue plan.

TASK 21.2 SET UP LIFT

SUB-TASKS

1. Select lifting equipment.
2. Set up lifting equipment.
3. Prepare workplace for lift.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Select lifting equipment.
  - Use only certified rated rigging equipment.
  - Match capacity of lifting equipment to load.
  - Determine and inspect attachments to be used such as hooks, chains or slings (wire, rope, nylon).
- 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.

TASK 21.3
RIG AND SECURE LOAD

SUB-TASKS

1. Rig load.
2. Secure load.
3. Inspect load.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Rig load.
  - Ensure proper rigging training and qualifications.
  - Ensure proper footing.
  - Knowledge of Musculoskeletal Disorders injuries.
  - 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
TEST AND MAKE THE LIFT

SUB-TASKS

1. Test lift.
2. Maintain line of sight to loader and spotter.
3. 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, move load in one direction only, 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.
  - Do not handle load, have spotter steading the tagline.
  - Do not walk under load.

TASK 21.5
DISMANTLE AND STORE LIFTING EQUIPMENT

SUB-TASKS

1. Remove lifting equipment.
2. Return workplace to normal condition.
3. Inspect, tag out, remove and replace damaged/defective lifting equipment.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Remove lifting equipment.
  - Remove hooks, slings and accessories.
  - Inspect equipment for defects and if unusable tag out and remove from service.
- Return workplace to normal condition.
  - Store slings according to manufacturer's specifications.
  - Ensure proper housekeeping.

UNDERGROUND MINER

Area of Competency 23: Perform Drilling Operations

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

TASK 23.1
PREPARE FACE FOR DRILLING

SUB-TASKS

1. Prepare for marking.
2. Choose appropriate drill pattern.
3. Lay out pattern.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Prepare for marking.
  - Mark face, as per company policies and procedures.
  - Ensure face is scaled and scaling is maintained.
  - Ensure ground support to face.
  - Ensure appropriate plans are available.
  - Identify bootlegs and/or missed holes.
  - Circle bootlegs and/or missed holes with contrasting paint.
  - Wash out water-soluble explosives using reblast missed holes.
  - Identify frozen holes.
  - Mark lifter.
- Choose an appropriate drill pattern.
  - Identify and distinguish drill patterns and their applications according to site policies and procedures.
  - Bench drill patterns.
  - Breast drill patterns.
  - Uppers drill patterns.
  - Drift drill patterns.
  - Slash drill patterns.
- Lay out pattern.
  - Ensure proper spacing and proper location of holes.
  - Ensure reference lines are well marked.
  - Maintain proper grade and direction following grade plugs.

TASK 23.2
DEMONSTRATE HAND DRILL KNOWLEDGE

SUB-TASKS

1. Train and become authorized for proper use and operation of all hand drills.
2. Identify type and size of drill bits and their applications.
3. Identify types and applications of drill steel and drill rods.
4. Select appropriate type and size of pipe and fittings.
5. Visually inspect drill.
6. Set up drill.
7. Conduct pre-operational checks before air and water are hooked up.
8. Conduct pre-operational checks after air and water are turned on.
9. Mount drill steel.
10. Dismantle drill.
11. Maintain drill.
12. Store drilling equipment.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Train and become authorized for proper use and operation of all equipment.
  - Follow safety guidelines (wear protective equipment, shut off appropriate valve, bleed all lines, secure all pipes, follow proper lock out procedures, wash or blow out lines to clear obstructions, install header, check line for leak, ensure 'whip check' is properly installed on air hose, where required).
- Identify types and applications of drill steel and drill rods.
  - Standard steel, auger steel, threaded steel, thread one- end, hex shank other end, threaded both ends, sectional drill rods.
  - Eliminate damaged or bent steel.
  - Send rejected steel to surface for recycling.
- Visually inspect drill.
  - Inspect equipment components for damage (spike, outer casing, air gooseneck, leg feed control, hand guard, side rod, exhaust port, throttle control, water hose and valve, inner casing, air leg, chuck, retainer, water tube).
- Set up.
  - Ensure area has been properly prepared for drilling.
  - Ensure proper back clearance.
  - Assemble all necessary tools and supplies.

- Pre-operational checks before air and water are hooked up.
  - Blow out air and water hoses.
  - Shut off and bleed air before filling lubricator with specified lubricant.
  - Ensure all controls are in 'off' position.
  - Hook up and securely tighten hoses.
  - Ensure spike is placed at or below foot level.
  - Check air and water goosenecks.
  - Ensure all control handles move freely.
  - Ensure there is no rock in chuck of machine.
  - Check chuck or steel for wear.
  - Make sure threads on all fittings are clean and tight.
  - Put rubber hand guard in place over leg air feed control.
  - Check side rods to make sure they are tight.
  - Check leg advance.
  - Ensure spike on leg is present.
  - Ensure all controls are in 'off' position.
  - Ensure chuck is turning when throttle is turned on with leg air feed off.
  - If water valve is attached to machine, turn valve on to chuck.
- Mount drill steel.
  - Follow proper procedures.
  - Place steel properly to avoid hazards.
  - Keep side rods tight.
- Dismantle drill.
  - Shut off air and water at headers.
  - Bleed water line at drill and slowly loosen hoses.
  - Disconnect hoses.
  - Coil hoses neatly.
  - Store hoses in appropriate place.
  - Ensure clear travel way.
- Maintain drill.
  - Ensure all goosenecks are tight.
  - Keep screens on goosenecks clean.
  - Replace plugged water tube.
  - If steel retainer does not work properly, send machine for repairs.
  - Identify any defects.
  - Assess severity of defect.
  - Repair defect according to company standards.
  - Report defect and repair to appropriate personnel.
- Store drilling equipment.
  - Where it will not be in way of fly rock from blasting.
  - Where it will not be a hazard to anyone or any machinery passing by.
  - If drill is not placed on a rack, stand drill up against wall where it cannot fall or be knocked over.
  - If drill is not to be used for a long time, pour oil into chuck to prevent rusting.

TASK 23.3
OPERATE STOPER

SUB-TASKS

1. Demonstrate hand drill knowledge.
2. Drill hole.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate hand drill knowledge.
  - Ensure water valve is turned on before drilling.
  - Prepare level working area.
- Drill hole.
  - Position stoper properly.
  - Position yourself according to recommended procedures.
  - Monitor conditions (proper water flow, loosening of ground, loosening of hoses, general condition of drill).
  - Watch for loose rock while collaring.
  - Check scale while drilling.
  - Carry stoper over your hip or shoulder (three-point contact) to move drill.

TASK 23.4
OPERATE JACKLEG

SUB-TASKS

1. Demonstrate hand drill knowledge.
2. Drill hole.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate hand drill knowledge.
  - Tighten nut on leg and ensure end of leg is not plugged with mud.
  - Ensure bottom of leg is in good condition and secured to prevent slippage.
  - Check leg advance.
  - Ensure leg moves freely.
  - Ensure chuck is turning when throttle is turned on with leg air feed off.
  - Ensure strong stream of water is flowing from chuck of machine.
- Drill hole.
  - Position jackleg properly.
  - Use proper anchor.
  - Watch for loose rock while collaring.
  - Check scale while drilling.
  - Carry jackleg over your shoulder to move drill.

TASK 23.5
OPERATE JUMBO

SUB-TASKS

1. Demonstrate hand drill knowledge.
2. Drill hole.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate drill knowledge.
  - Perform pre-operational check.
  - Follow barricade and signage procedures.
  - Ensure proper sized bit and knowledge of how to change bits.
  - Proper condition and length of drill steel.
- Drill hole.
  - Position drill at proper position in relation to face.
  - Ensure stabilizers are positioned correctly.
  - Collar hole properly.
  - Monitor pressure.
  - Monitor ground control while collaring.
  - Connect air, water and electrical as per site policies and procedures.

TASK 23.12
OPERATE REMOTE DRILL

SUB-TASKS

1. Demonstrate drill knowledge.
2. Drill hole.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate drill knowledge.
  - Ensure chuck is turning when throttle is turned on.
  - Ensure strong stream of water is flowing from chuck of machine.
  - Ensure proper balance.
  - Ensure steel retainer is working properly.
- Drill hole.
  - Determine and use proper bit size.
  - Determine and use proper steel size.
  - Collar hole properly and drill hole to desired depth.

TASK 23.13
OPERATE LONGHOLE DRILL

SUB-TASKS

1. Demonstrate drill knowledge.
2. Drill the hole.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate drill knowledge.
  - Know characteristics of types of long hole drilling.
  - Rotary – maintain feed pressures, proper set-up.
  - In the Hole – maintain feed pressures, proper set-up, add and remove rods.
  - Top Hammer – mast can flip to drill up or down, ensure good water pressure for flushing.
- Drill hole.
  - Rotary drilling.
  - In the Hole drilling.
  - Top Hammer drilling.

TASK 23.14
OPERATE REMOTE DRILL

SUB-TASKS

1. Demonstrate drill knowledge.
2. Ensure proper set-up.
3. Drill hole.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate drill knowledge.
  - Perform pre-operational check.
  - Understand and company with government and company safety systems.
  - Ensure proper sized bit and knowledge of how to change bits.
  - Proper condition and length of drill steel.
  - Test remote control operation and monitoring system.
  - Perform from a safe location.
- Ensure proper set-up.
  - Follow engineered plans and drawings.
- Drill rock.
  - Position drill at proper position in relation to face.
  - Collar hole properly.
  - Drill hole to desired depth.
  - Pull drill away to a safe location.

TASK 23.15
OPERATE BLOCK HOLER (MANUAL OR REMOTE)

SUB-TASKS

1. Demonstrate drill knowledge (Manual/Remote).
2. Fill water tank.
3. Check remote before entering open stope.
4. Drill hole.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate drill knowledge.
  - Perform pre-operational check.
  - Follow company explosive management plan.
  - Follow company barricades and signage procedures.
  - Ensure proper size of bit for blasting tube and how to change bit.
  - Proper length of drill steel.
- Fill water tank.
- Test remote control (before entering open stope).
  - Operate from a safe location.
- Drill hole.
  - Load blasting tube with explosive and load hole in remote.

UNDERGROUND MINER

Area of Competency 29: Conduct Blasting Operations

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

THE FOLLOWING PRINCIPLES APPLY TO ALL TASKS UNDER THIS AREA OF COMPETENCY

- Adhere to site and government legislation.
- Adhere to company explosive management plan.

TASK 29.1
IDENTIFY EXPLOSIVES AND BLASTING AGENTS

SUB-TASKS

1. Identify types and forms.
2. Report all hazardous or potentially hazardous conditions to appropriate authority.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Identify types and/or forms of explosives.
  - E.g., primers, detonators, detonator cord.

TASK 29.2
CHOOSE EXPLOSIVES AND BLASTING AGENTS

SUB-TASK

1. Choose type, form, strength and correct amount of explosives and blasting agents for a specific blasting job.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Choose type, form, strength and correct amount of explosives and blasting agents for a specific blasting job.
  - Factors include dry hole, wet hole, perimeter hole, hole size.

TASK 29.3
SELECT DETONATORS

SUB-TASKS

1. Identify categories of detonators.
2. Identify types and function of detonator cords.
3. Select blasting detonators.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Identify categories of detonators.
  - Distinguish between Electrical detonators and Non-electrical (Nonel) detonators.
  - Distinguish between slow cap (macro-delay) and fast cap (micro-delay) detonators features.
  - Identify programmable caps.
- Identify types of detonator cords.
  - Distinguish by length, size, colour, flash or non-flash and speed.
- Select blasting detonators.
  - Select correct detonator and detonator cord with respect to method of initiating firing, strength, delay (e.g., MS connectors).
- Select boosters when required according to blasting documents.

TASK 29.4
TRANSPORT EXPLOSIVES

SUB-TASKS

1. Transport explosive from storage site to workplace.
2. Return leftover explosives.
3. Record in logbook.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Transport explosive from storage site to workplace.
  - Transport separately in secured containers.
  - Ensure no delay.
  - Ensure explosives were not left unattended.
- Return leftover explosives.
  - Return leftover explosives to proper storage.
- Record in logbook.
  - Record in logbook as per site policies and procedures.

TASK 29.5
CONDUCT BLAST HOLE VERIFICATION

SUB-TASKS

1. Ensure blast holes are at design depth.
2. Ensure blast holes are at design location.
3. Clean drilled holes.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Ensure blast holes at design depth.
  - Use non-sparking measuring device (e.g., measuring tape, brass weight, loading stick).
- Ensure blast holes at design location.
  - Confirm hole location with engineering department as required.
- Clean drilled holes.
  - Clean holes using blowpipes, ANFO loader hose.

TASK 29.6
PREPARE BLAST HOLE FOR DETONATION

SUB-TASKS

1. Prime blast hole.
2. Load hole with explosives.
3. Plug hole, as required.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Load hole with explosives.
  - Know details of blast plan (how many, lengths of down lines to use, delays, blast media, collaring).
  - Avoid damaging lines with loading unit.

TASK 29.7
OPERATE EXPLOSIVE LOADERS

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Select explosive loader.
3. Operate explosive loader or loading stick.
4. Dismantle, move and store explosive loading equipment.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Includes loader, loading sticks.
- Operate explosive loader or loading stick.
- Load hole using loading stick and stick powder.
  - Insert detonator and stick powder into hole, tamp powder lightly using loading stick.
  - Ensure no holes were forgotten.
  - Ensure cords are interconnected between holes or attached to trunk line circuits.
  - Attach delay devices or initiating detonators to trunk line circuits.
- Dismantle, move and store explosive loading equipment.
  - De-energize and disconnect all lines.
  - Ensure loading devices are empty of all explosives before storing as per site policies and procedures.
  - Move and store loading equipment where it will not be exposed to blast damage.

TASK 29.8
BLAST GUARDING

SUB-TASKS

1. Perform evacuation process.
2. Guard area.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Perform evacuation process.
  - Follow according to site policies and procedures.
  - Ensure all warnings and signals are issued prior to detonation.
  - Ensure knowledge of airflow.
  - Ensure knowledge of diamond drills or boar holes.
  - Ensure all equipment is out of the blast zone.
  - Vacate all affected areas except necessary personnel assisting blasting.
- Guard area.
  - Follow according to site policies and procedures.
  - Station a worker at each entrance or approach with detailed instructions.
  - Ensure all guards are radio equipped.
  - Ensure no personnel enter the evacuation zone.
  - Ensure no one returns to workplace affected by blasting until approved by person responsible for the blast.

TASK 29.9
STORE EXPLOSIVES

SUB-TASKS

1. Maintain/store explosives.
2. Destroy explosives.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Maintain/store explosives.
  - Ensure accuracy of magazine records.
- Destroy explosives.
  - Destroy explosives (e.g., out of date, frozen) according to site policies and procedures.

TASK 29.10
DETONATE BLAST

SUB-TASKS

1. Follow 'tie-in' plan.
2. Initiate blast.
3. Deal with misfires.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Follow 'tie-in' plan.
  - Clear area.
  - Post guard.
  - Hook up caps.
  - Verify all clear and withdraw from blast site.
- Initiate blast.
  - Surface.
  - Select initiation point.
  - Select surface delays.
  - Underground.
  - Hook up blast to blasting system.
  - Use tester to check circuit continuity.
  - Report blast.
- Deal with misfires.
  - Identify type and position of misfires.
  - Take remedial action with misfires.
  - Document and report misfires.
  - Recover explosive materials.

TASK 29.11
POST BLAST ACTIVITIES

SUB-TASKS

1. Monitor gases.
2. Confirm ventilation flow.
3. Disconnect and neutralize blast box.
4. Monitor ground conditions.
5. Provide all clear.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Monitor gases.
  - Ensure testers are properly calibrated.
  - Test gas levels according to site policies and procedures.
  - Confirm gas levels are safe according to site policies and procedures.
- Confirm ventilation flow.
  - Check condition of vents.
  - Make repairs as needed.
  - Confirm main ventilation and auxiliary ventilation are working properly.
- Disconnect and neutralize blast box.
  - Disconnect and remove blast wire as per site policies and procedures.
- Monitor ground conditions.
  - Check blast site for slips, cracks, deformations, bulging screen (blast damage).
  - Wash and scale blast area.
  - Spray broken rock with minimal amount of water required to control dust effectively.
- Provide all clear.
  - Contact appropriate person to provide all clear as per site policies and procedures.

UNDERGROUND MINER

Area of Competency 30: Operate Processing Equipment

MINING INDUSTRY
HUMAN RESOURCES COUNCIL

THE FOLLOWING PRINCIPLES APPLY TO ALL TASKS UNDER THIS AREA OF COMPETENCY

- Adhere to Area of Competency 6 – Energy Sources.
- Adhere to Area of Competency 10 – Equipment Knowledge.
- Ensure proper guards are in place.

TASK 30.1
MAINTAIN BINS

SUB-TASKS

1. Demonstrate equipment knowledge.
2. Control level.
3. Clear hang-ups/blockages.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Determine layout of bin process system.
  - Identify name, function and location of principal components of hoppers and bins (grizzly rails, chutes, guardrails, entry doors, level probes, covers).
  - Understand dangers of runs of discharge during shutdown and methods of preventing them.
- Control level.
  - Use appropriate systems to ensure proper levels (e.g., problems).
- Clear hang-ups/blockages.
  - Follow procedures to ensure safety of self and others when removing blockages and clearing spillages.
  - Select appropriate tools and equipment to clear hang- ups and blockages.

TASK 30.2
OPERATE MUCK CIRCUIT

SUB-TASKS

1. Demonstrate equipment Knowledge.
2. Clear blockages.
3. Maintain circuit.
4. Monitor equipment/Instruments.
5. Knowledge of interlock conditions.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Wear appropriate PPE.
  - Know your surroundings and interaction with moving machinery if not properly isolated.
  - Be aware of falling objects from conveyor, pinch points and guard railing.
  - Knowledge of your company's Operations Management Software DCS (distributed control system) and basic start up and shut down procedures.
  - Understand and monitor temperatures, fluid levels, sensors, ware, damage and instrumentation bypasses and interlocking protocols pertaining to the muck circuit.
  - Know electrical hazards and stored energy.
  - Knowledge of automated equipment that start up remotely.
  - Ensure and maintain a constant flow stream of ore.
  - Ensure no tramp material enters the ore stream.
  - Document and enter data and report.
  - Proper communication with supervisors and different departments.
- Clear blockages.
  - Perform lock out tag out and ensure de-energization have been achieved.
  - Refer to safe operating procedures, company policies and JHA, if required.
  - Obtain confined space entry permits, if required.
- Maintain Circuit.
  - Monitor belt condition, tracking and belt loading conditions.
  - Monitor chute conditions, build up, wear and tear.
  - Ensure and maintain a constant stream of ore.
  - Housekeeping in transfer stations.
  - Monitor Equipment/Instruments.

- Routine checks of crush and convey system.
- Report damage and safety improvements.
- Monitor crusher gap to maintain constant particle size.
- Know your alarms, pressure, temperature, speed, alignment, levels, voltages, currents, e-stops and pullcords.
- Inspect fire suppression systems routinely.

- Knowledge of Interlock Conditions.
  - Be aware of interlocking conditions and sequence of conveyor start up and shut down.
  - Understand and monitor which bypasses are in place can affect operations and safe operating procedures.
  - Only those qualified and competent should input and remove bypass on the muck circuit.

TASK 30.3
MANAGE MUCK PILE

SUB-TASKS
1. Bar muck.
2. Spray muck pile.

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE
- Bar muck.
  - Never allow muck pile to become excessively steep.
  - Ensure safe way to retreat before baring chute.
  - Bar chute down safely and efficiently.
- Spray muck pile.
- Spray broken muck with enough water flow to control dust effectively.

TASK 30.5
OPERATE CRUSHER

SUB-TASKS
1. Demonstrate equipment knowledge.
2. Operate grizzly.
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 30.6
MAINTAIN ORE INVENTORIES

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.
  - Be aware of live piles.

TASK 30.7
OPERATE DUST COLLECTORS

SUB-TASKS

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

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Comply with company and environment policies and procedures
  - Maintain dust suppression systems.
  - Ensure proper use of specialized PPE.
  - Scrubbers, bag houses.
- 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.
- Monitor equipment.
  - Ensure chute inspection hatches are closed during operations.
  - Ensure dust cyclone and exhaust fan are operating properly.

TASK 30.8
OPERATE FEEDERS

SUB-TASKS

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, roll feeder, rotary valve feeder, drag feeder, hydro stroke 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.

TASK 30.10
OPERATE CONVEYOR

SUB-TASKS

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

REFERENCE/EXAMPLES OF ABILITIES AND KNOWLEDGE

- Demonstrate equipment knowledge.
  - Includes but not limited to: belt conveyors, drag conveyors, pneumatic conveyors, screw conveyors, bucket elevators, high angle, radial stacker conveyors.
  - Conduct pre-operational checks.
  - Anticipate unexpected movement of conveyor components or feed (resulting from stored/potential energy).
  - Check rollers and idlers for proper operations.
  - Cross under conveyor at designated areas only.
  - Stay clear of moving pulleys.
  - Record defect and corrective action taken in logbook.
- 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, tested for zero energy and tagged before removing blockages.
  - Remove manually or mechanically.
- Move conveyor and components.
  - Load conveyor on an incline.

TASK 30.20
INSPECT AND MAINTAIN HOSES

SUB-TASKS

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