



<b>Skills Programme</b> This Curriculum Doc is applicable to the three (3) Skills Programmes				
Curriculum Code(s)	Curriculum Title(s)			
900165-000-00-00	Exploration Driller-Underground Hardrock Operations			
900166-000-00-00	Exploration Driller-Underground Coal Operations			
900167-000-00-00	Exploration Driller-Surface Mining Operations			
Quality Partner (QP)	Name	Website Address	Telephone Number	Logo
Mining Qualifications Authority	Jeannette De Leeuw	<a href="https://mqa.org.za/">https://mqa.org.za/</a>	011 547 2600	 MINING QUALIFICATIONS AUTHORITY

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  - 2.2. Guidelines for Practical Skills
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  - 3.1. Purpose of the Practical Skill Modules
  - 3.2. Guidelines for Practical Skills
    - 3.2.1. PM-04-PS01: Start-up and shut-down the machine
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## SECTION 1 CURRICULUM SUMMARY

### Occupational Information

#### Associated Occupation Code and Title

711301 Driller

#### Skills Programme Curriculum Codes and Titles

900165-000-00-00 Exploration Driller-Underground Hardrock Operations

900166-000-00-00 Exploration Driller-Underground Coal Operations

900167-000-00-00 Exploration Driller-Surface Mining Operations

#### Alternative Titles

None

### Curriculum Information

#### Curriculum Structure

NQF Level: 3

Credits: 40

#### Relation of this Curriculum for progression

Progression will be to Blaster, or Miner

#### 1.1. Curriculum Structure

##### 1.1.1. Knowledge Modules

900155-000-00-KM-01 Workplace fundamentals, NQF Level 2, Credits 4

900134-000-00-KM-01 Health, safety, and the environment, NQF Level 2, Credits 4

900155-000-00-KM-01 Operations and machines, NQF Level 3, Credits 4

900155-000-00-KM-02 Components, controls, and consumables, NQF Level 3, Credits 4

900156-000-00-KM-01, Work team supervision, NQF Level 3, Credits 4

Total Credits: 20

##### 1.1.2. Practical Skill Modules

Compulsory module/s

- 900134-000-00-PM-01 Apply, exercise, and ensure safety, health and environmental measures and procedures, NQF Level 2, Credits 4
- 900155-000-00-PM-01 Perform pre-operational activities, NQF Level 3, Credits 4

#### A learner may choose any of the below electives:

##### Elective module 1: Underground hardrock operations

900165-000-00-PM-01 Operate an exploration drilling machine in an Underground Hardrock operation, NQF Level 3, Credits 12

Elective module 2: Underground coal operations

900166-000-00-PM-01 Operate an exploration drilling machine in an Underground Coal operation, NQF Level 3, Credits 12

Elective module 3: Surface operations

900167-000-00-PM-01 Operate an exploration drilling machine on a Surface operation, NQF Level 3, Credits 12

Total Credits: 20

**1.2. Entry Requirements**

Open access.

**1.3. Recognition of Prior Learning (RPL)**

RPL for access to the external integrated summative assessment: Accredited providers and approved workplaces must apply the internal assessment criteria specified in the related curriculum document to establish and confirm prior learning. Accredited providers and workplaces must confirm prior learning by issuing a statement of result or certifying a work experience record.

RPL for access to the qualification: Accredited providers and approved workplaces may recognise prior learning against the relevant access requirements.

#### **1.4. Quality Partner for Assessment**

Originator/Development Quality Partner (DQP): Mining Qualifications Authority

Originating Provider/Assessment Quality Partner (AQP): Mining Qualifications Authority

Name of body: Mining Qualifications Authority

Address of body: 7 Anerley Road, Parktown 2198

Website details: <https://mqa.org.za/>

## SECTION 2: OCCUPATIONAL PROFILE

### 0. Occupational Purpose

The purpose of this skills programme is to prepare a learner to operate as an Exploration Driller.

An Exploration Driller operates an exploration drilling machine to drill holes for exploration purposes in the mining industry to probe the contents of known ore deposits and potential sites. Operations are primarily in the mining sector. The qualifying learner will know the functioning and operating requirements for the exploration drilling system and ancillary equipment, including the health, safety, and the environmental requirements, to be able to operate the machine productively and safely.

A qualified learner will be able to:

- Apply, exercise, and ensure safety, health and environmental measures and procedures
- Operate an exploration drilling machine to drill holes for exploration

### 1. Occupational Tasks

- Apply, exercise, and ensure safety, health and environmental measures and procedures (NQF Level 2)
- Operate the machine (NQF Level 3)

### 2. Occupational Task Details

#### 2.1. Apply, exercise, and ensure safety, health and environmental measures and procedures (NQF Level 2)

##### Unique Product or Service

- Safety, health and environmental measures and procedures are applied and exercised

##### Occupational Responsibilities

- i. Apply, exercise, and ensure safety, health and environmental measures and responsibilities, in accordance with operating requirements
- ii. Deal with ground and strata conditions, in accordance with operating requirements

##### Occupational Contexts

- Mining operations



## **2.2. Operate the machine (NQF Level 3)**

### **Unique Product or Service**

- Machine operated

### **Occupational Responsibilities**

- i. Perform pre-operational activities
- ii. Operate the machine

### **Occupational Contexts**

- Mining operations

## **SECTION 3 CURRICULUM SPECIFICATIONS**

### **SECTION 3A KNOWLEDGE MODULE SPECIFICATIONS**

#### List of Knowledge/Theory Modules

- 900155-000-00-KM-01 Workplace fundamentals NQF Level 2 Credits 4
- 900134-000-00-KM-01 Health, safety, and the environment NQF Level 2 Credits 4
- 900155-000-00-KM-01 Operations and machines NQF Level 3 Credits 4
- 900155-000-00-KM-02 Components, controls, and consumables NQF Level 3 Credits 4
- 900156-000-00-KM-01 Work team supervision NQF Level 3 Credits 4

## **0. 900155-000-00-KM-01, Workplace fundamentals, NQF Level 2, Credits 4**

### **0.0. Purpose of the Knowledge Modules**

The main focus of the learning in this knowledge module is to build an understanding of the basic concepts which underlie the workplace context, the regulatory environment and the explicit and tacit rules which govern the workplace.

The learning will enable learners to demonstrate an understanding of:

- KM-01-KT01: Employment (20%)
- KM-01-KT02: Organisation of work (20%)
- KM-01-KT03: Employer-Employee relationships (15%)
- KM-01-KT04: Concepts related to the performance of work (15%)
- KM-01-KT05: Ethics at work (15%)
- KM-01-KT06: Current trends influencing work (15%)

### **0.1. Guidelines for Topics**

#### **0.2. KM-01-KT01: Employment (20%)**

***Topic elements to be covered include:***

- KT0101 An employee's legal rights
- KT0102 Legislation which governs employers, employees, construction, and mining, as applicable
- KT0103 Employer roles and responsibilities
- KT0104 Employee role and responsibilities
- KT0105 Role of organised labour in business, structures, and processes

#### ***Internal Assessment Criteria***

- IAC0101 Define and describe the concepts which underpin employment, employment related legislation and systems
- IAC0102 Discuss the impact of these concepts on an employer and employee
- IAC0103 Describe process which govern employment, disputes, and other labour relations issues

#### **0.3. KM-01-KT02: Organisation of work (20%)**

***Topic elements to be covered include:***

- KT0201 What is work, including products and services, paid and unpaid
- KT0202 Work as sets of value-adding processes
- KT0203 The value chain in the construction and mining sectors, as applicable

- KT0204 Work as collaboration - the role of teams in work processes
- KT0205 How teams function
- KT0206 Team organisation, team roles, meetings, and information flow
- KT0207 Meeting protocols for a variety of meeting types, including formal meetings and informal "stand-up" meetings
- KT0208 Organisational structures and functions, including departments, services, and inter-departmental relationships

#### ***Internal Assessment Criteria***

- IAC0201 Define and describe the concepts which underpin work, working and working relationships
- IAC0202 Discuss the impact of these concepts on an employee and co-workers
- IAC0203 Describe process which govern work in the workplace

#### **0.4. KM-01-KT03: Employer-Employee relationships (15%)**

##### ***Topic elements to be covered include:***

- KT0301 Employment contracts including learning contracts such as learnerships, learning programmes, apprenticeships, and internships
- KT0302 Mandates, vision, mission, policies, and procedures
- KT0303 Rules, codes of conduct and ethics
- KT0304 Organisation values, common and specific
- KT0305 Labour relations processes including, discipline, grievance, strikes, lock outs, negotiation, conciliation, mediation, and arbitration

#### ***Internal Assessment Criteria***

- IAC0301 Define and describe the concepts which define employer and employee relationships
- IAC0302 Discuss the impact of these concepts on an employer and employee
- IAC0303 Describe process which govern employer-employee relationships

#### **0.5. KM-01-KT04: Concepts related to the performance of work (15%)**

##### ***Topic elements to be covered include:***

- KT0401 Planning, organising and control
- KT0402 Work flow
- KT0403 Cost, waste
- KT0404 Productivity, efficiency
- KT0405 Housekeeping

- KT0406 Risk, health, safety, environment, and related systems
- KT0407 Quality and quality systems
- KT0408 Continual improvement

#### ***Internal Assessment Criteria***

- IAC0401 Define and describe the concepts related to the performance of work
- IAC0402 Discuss the impact of these concepts on the individual employee
- IAC0403 Describe processes which govern performance of work

#### **0.6. KM-01-KT05: Ethics at work (15%)**

##### ***Topic elements to be covered include:***

- KT0501 Definition of ethical behaviour
- KT0502 Components of ethical behaviour, including integrity, honesty, fair dealing, respecting diversity
- KT0503 Unwritten but expected behaviours including, reliability, accountability, time keeping, respect for others
- KT0504 Lapses in ethical behaviour, including sexual harassment, racism, bullying, theft, abuse of company property, rules, time and sick leave
- KT0505 Conflicts of interest, including primary and secondary interests the impact on individuals and organisations and the link to corruption
- KT0506 The need for ethical behaviour and the impact on consequences of lapses in unethical behaviour

#### ***Internal Assessment Criteria***

- IAC0501 Define and describe the concepts, issues, and examples of ethical and unethical conduct
- IAC0502 Discuss the impact of these factors on an employer and employee
- IAC0503 Describe the impact of lapses in ethical behaviour on the organisation and individuals in the organisations
- IAC0504 Describe the processes which employer organisations use to support ethical conduct in the workplace

#### **0.6.1. KM-01-KT06: Current trends influencing work (15%)**

##### ***Topic elements to be covered include:***

- KT0601 Employment equity
- KT0602 Broad-Based Black Economic Empowerment
- KT0603 Sustainability
- KT0604 Diversity

- KT0605 Work-life balance
- KT0606 Working smart

### **Internal Assessment Criteria and Weight**

- IAC0601 Describe and explain the current trends affecting organisations and employees
- IAC0602 Discuss the impact of these factors on an employer and employee

## **0.7. Provider Programme Accreditation Criteria**

### **0.7.0. Physical Requirements**

<b>Skills Development Providers</b>	<b>Assessment Centres</b>
<b>Equipment &amp; Tools</b>	<b>Equipment &amp; Tools</b>
<ul style="list-style-type: none"> <li>• OSHE and operational training facilities, plant equipment and resources</li> </ul>	<ul style="list-style-type: none"> <li>• OSHE and operational training facilities, plant equipment and resources</li> </ul>
<b>Consumables</b>	<b>Consumables</b>
<ul style="list-style-type: none"> <li>• OSHE and operational related consumables</li> </ul>	<ul style="list-style-type: none"> <li>• OSHE and operational related consumables</li> </ul>

### **0.7.1. Human Resource Requirements**

<b>Skills Development Providers</b>	<b>Assessment Centres</b>
<ul style="list-style-type: none"> <li>• Suitably qualified and experienced facilitators, with a minimum NQF Level 3 ETDP qualification; and 1 years' experience in Directional Drilling, support personnel and assessors appointed in accordance with the organisation's Quality Management system.</li> </ul>	<ul style="list-style-type: none"> <li>• Suitably qualified and experienced facilitators, with a minimum NQF Level 3 ETDP qualification; and 1 years' experience in Directional Drilling, support personnel and assessors appointed in accordance with the organisation's Quality Management system.</li> </ul>

## **0.8. Legal Requirements**

<b>Skills Development Providers</b>	<b>Assessment Centres</b>
<ul style="list-style-type: none"> <li>• Registered Skills Development Providers (SDP) will comply with the requirements of the following, including all amendments, regulations, and directives, as applicable:</li> <li>• Occupational Health and Safety Act 85 of 1993</li> <li>• Mine Health and Safety Act 29 of 1996</li> <li>• Labour Relations Act 66 of 1995</li> </ul>	<ul style="list-style-type: none"> <li>• Registered Skills Development Providers (SDP) will comply with the requirements of the following, including all amendments, regulations, and directives, as applicable:</li> <li>• Occupational Health and Safety Act 85 of 1993</li> <li>• Mine Health and Safety Act 29 of 1996</li> <li>• Labour Relations Act 66 of 1995</li> </ul>

<ul style="list-style-type: none"><li>• The Basic Conditions of Employment Act 75 of 1997</li></ul>	<ul style="list-style-type: none"><li>• The Basic Conditions of Employment Act 75 of 1997</li></ul>
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### 0.9. Critical Topics to be Assessed Externally for the Knowledge Module

None

## **1. 900134-000-00-KM-01, Health, safety, and the environment, NQF Level 2, Credits 4**

### **1.1. Purpose of the Knowledge Modules**

The main focus of the learning in this knowledge module is to build an understanding of the basic principles relating to health, safety, and the environment

The learning will enable learners to demonstrate an understanding of:

- KM-02-KT01 Health (30%)
- KM-02-KT02 Safety (30%)
- KM-02-KT03 Occupational environments (40%)

### **1.2. Guidelines for Topics**

#### **1.3. KM-02-KT01 Health (30%)**

##### ***Topic elements to be covered include***

- KT0101 Medical surveillance
- KT0102 Employee wellness programmes

KT0103 Employee assistance programmes

- KT0104 Hygiene
- KT0105 Contraband; substance abuse, including impact on work
- KT0106 Ergonomic Principles
- KT0107 Diseases and disease control

##### ***Internal Assessment Criteria***

- IAC0101 Describe the principles underpinning health programmes
- IAC0102 Describe the impact of substance abuse

#### **1.4. KM-02-KT02 Safety (30%)**

##### ***Topic elements to be covered include***

- KT0201 Pre- and start -of-shift procedures, including time and attendance, schedules, access procedures, lamproom procedures, examination, and signature of flammable gas measuring instruments; as applicable
- KT0202 Statutory and regulatory requirements, and compliance related to safety; employees' rights and duties; safety representatives and a health and safety committee; employers' rights and duties; permissions; appointments and reporting
- KT0203 Basic principles of and compliance to organisational agreements procedures, policies, codes of practice and standards
- KT0204 Personal protective equipment; available, fit for purpose, in good working order and use in accordance with specified requirements; which may include hard hat, gloves,



hearing protection, eye protection, foot protection, self-contained rescuer, knee guards, seat protector, elbow guards, respirator/ mask and proximity safety devices

- KT0205 Interaction between man and machine, machine, and machine in close proximity, including proximity safety devices and proximity detection systems (PDS)
- KT0206 Towing of machines, as applicable
- KT0207 Travel, personnel carriers/ conveyances, travelling ways and routes; which may include queuing, entering, and leaving personnel carriers/ carriages and conduct inside personnel carriers/ conveyances; and may include boarding/ alighting conveyors and chairlifts
- KT0208 Role and purpose of self-rescuers, as applicable
- KT0209 Emergency preparedness and response; and evacuation procedures including assembly points and refuge bays, as applicable; emergencies may include seismic events, flooding, fires, power failures, accidents to persons and accident to infrastructure, plant, machines, and equipment
- KT0210 Plugging leaks or inundation; and measures used to determine the quantity of the leak
- KT0211 Role and purpose of mines rescue services and rescue drilling unit
- KT0212 Fires, causes and effects; sources of fire, including electrical, friction, blasting, cutting, and welding, smoking or contraband, diesel engines and fuel, flammable fluid, or greases; plastic or other similar materials, methane or other gas explosions, impact generating sparks; hot work familiarisation and gas testing; fire prevention; fire-fighting equipment availability and placement
- KT0213 Heat, including heat exhaustion and heat stroke; sources of heat
- KT0214 Fatigue, including causes and effects
- KT0215 Concepts and principles of hazard identification and risk assessment, including electrical, mechanical, and environmental hazards
- KT0216 Natural hazards, such as snakes or lightning, as applicable

### ***Internal Assessment Criteria***

- IAC0201 Describe the relevant statutory, regulatory, and organisational requirements
- IAC0202 Describe the various safety factors, hazards and risks and explain methods of elimination or mitigation
- IAC0203 Describe emergency and rescue procedures and processes

### **1.5. KM-02-KT03 Occupational environments (40%)**

#### ***Topic elements to be covered include***

- KT0301 Identifying basic geological rock types and structures; identifying mining induced ground conditions; which may include brows, bed separation, fracturing and loose rocks, as applicable; identifying strata formation from bore-hole log data, as applicable; falls of ground; the influence that the geological conditions have on the rock strata; hazards and risks related to geological conditions and mining induced ground conditions;

- KT0302 Strata control principles and methods, which may include jointing, faults, slips, dykes and sills, key blocks, bedding planes, earthquakes/ seismicity, safety factors, support systems, unsafe support, ground conditions and loose rocks, as applicable; dealing with geological conditions in terms of demarcation and support, which may include method, size and type, as applicable; the influence on strata control of the installation of pre-stressed support, as applicable; condition/ rock mass rating, as applicable; pre-conditioning, as applicable; measures to prevent or mitigate injuries, property damage and time delays; and consequences of inadequate strata control
- KT0303 Basic ventilation principles, as applicable
- KT0304 Air-borne pollutants, including health hazards and risks; inhalable and respirable pollutants; causes, remedies, and prevention
- KT0305 Water, water pressure, accumulation of water and inundation
- KT0306 Gases, including oxides of nitrogen, carbon dioxide, carbon monoxide, hydrogen, hydrogen sulphide, hydrocyanic acid, methane, nitrous fumes, and oxygen; sources, methods of detection and actions taken when encountered; as applicable
- KT0307 Basic principles of flameproofing, as applicable
- KT0308 Stored energy, causes, effects, de-energising, and isolation; including pipes under pressure
- KT0309 Stone dust, including legal requirements and application, as applicable
- KT0310 Noise, including hazards of excessive noise over 85 decibels
- KT0311 Dealing with low visibility
- KT0312 Illumination, including cap lamps, machine lighting, legal requirements
- KT0313 Oil and fuel, including leaks, spillages, storage, and impact on the environment
- KT0314 Working in confined spaces and confined areas, in steeply inclined areas, close to open excavations and over water of unknown depth
- KT0315 Vibration - causes, impact, and effects
- KT0316 Hazardous materials, including leaks, spillages, storage, accumulation of combustible material; and impact on the environment
- KT0317 Underfoot conditions - slip and fall
- KT0318 Working at heights; safety harnesses
- KT0319 Transport and machinery; man-machine interface; traffic management; moving machinery, guards and guarding
- KT0320 Electricity, electrical systems, and connections; exposure to unsafe electrical connections
- KT0321 Contraband

- KT0322 Signs and signage, including warning, mandatory, statutory, and informative signs
- KT0323 Entering prescribed areas, which may include barricaded and abandoned areas
- KT0324 Methods of hazard elimination and mitigation
- KT0324 Statutory and regulatory requirements

### ***Internal Assessment Criteria***

- IAC0301 Identify the basic geological rock types and structures
- IAC0302 Identify mining induced ground conditions,
- IAC0303 Identify strata formation from bore-hole log data, as applicable
- IAC0304 Identify and describe falls of ground
- IAC0305 Describe and explain the influence that the geological conditions have on the rock strata
- IAC0306 Describe and explain strata control principles and methods
- IAC0307 Describe and explain dealing with geological conditions in terms of demarcation and support, the influence on strata control of the installation of pre-stressed support, as applicable; and condition/ rock mass rating, as applicable
- IAC0308 Describe and explain the hazards and risks related to geological conditions and mining induced ground conditions; measures to prevent or mitigate injuries, property damage and time delays; and consequences of inadequate strata control
- IAC0310 Describe and explain the various applicable environmental elements, hazards, and risk assessment
- IAC0311 Describe and explain methods of elimination and mitigation

## 1.6. Provider Programme Accreditation Criteria

### 1.6.1. Physical Requirements

Skills Development Providers	Assessment Centres
<b>Equipment &amp; Tools</b>	<b>Equipment &amp; Tools</b>
<ul style="list-style-type: none"> <li>OSHE and operational training facilities, plant equipment and resources</li> </ul>	<ul style="list-style-type: none"> <li>OSHE and operational training facilities, plant equipment and resources</li> </ul>
<b>Consumables</b>	<b>Consumables</b>
<ul style="list-style-type: none"> <li>OSHE and operational related consumables</li> </ul>	<ul style="list-style-type: none"> <li>OSHE and operational related consumables</li> </ul>

### 1.6.2. Human Resource Requirements

Skills Development Providers	Assessment Centres
<ul style="list-style-type: none"> <li>Suitably qualified and experienced facilitators, with a minimum NQF Level 3 ETDP qualification; and 1 years' experience in Directional Drilling, support personnel and assessors appointed in accordance with the organisation's Quality Management system.</li> </ul>	<ul style="list-style-type: none"> <li>Suitably qualified and experienced facilitators, with a minimum NQF Level 3 ETDP qualification; and 1 years' experience in Directional Drilling, support personnel and assessors appointed in accordance with the organisation's Quality Management system.</li> </ul>

## 1.7. Legal Requirements

Skills Development Providers	Assessment Centres
<ul style="list-style-type: none"> <li>Registered Skills Development Providers (SDP) will comply with the requirements of the following, including all amendments, regulations, and directives, as applicable:</li> <li>Occupational Health and Safety Act 85 of 1993</li> <li>Mine Health and Safety Act 29 of 1996</li> <li>Labour Relations Act 66 of 1995</li> <li>The Basic Conditions of Employment Act 75 of 1997</li> </ul>	<ul style="list-style-type: none"> <li>Registered Skills Development Providers (SDP) will comply with the requirements of the following, including all amendments, regulations, and directives, as applicable:</li> <li>Occupational Health and Safety Act 85 of 1993</li> <li>Mine Health and Safety Act 29 of 1996</li> <li>Labour Relations Act 66 of 1995</li> <li>The Basic Conditions of Employment Act 75 of 1997</li> </ul>

## 1.8. Critical Topics to be Assessed Externally for the Knowledge Module

None

## **2. 900155-000-00-KM-01, Operations and machines, NQF Level 3, Credits 4**

### **2.1. Purpose of the Knowledge Modules**

The main focus of the learning in this knowledge module is to build an understanding of the basic fundamentals operations and machines.

The learning will enable learners to demonstrate an understanding of:

- KM-03-KT01: Methods and processes (10%)
- KM-03-KT02: Machine operations (10%)
- KM-03-KT03: Machines (70%)
- KM-03-KT04: Explosives (10%)

### **2.2. Guidelines for Topics**

#### **2.2.1. KM-03-KT01: Methods and processes (10%)**

***Topic elements to be covered include:***

- KT0101 Purpose, processes, and applications
- KT0102 Methods and processes.
- KT0103 The basic operating cycle, as applicable

#### ***Internal Assessment Criteria***

- IAC0101 Describe various processes and methods and their impact on the environment

***(Weight 10%)***

#### **2.3. KM-03-KT02: Machine operations (10%)**

***Topic elements to be covered include:***

- KT0201 Types of machines, their operation, and applications
- KT0202 Role of the operator
- KT0203 Designated routes, travelling and haul ways and associated signage, routes, speeds, and roadway conditions, as applicable
- KT0204 Precautions when travelling on inclines and declines and associated control systems such as signage, routes, speeds, and roadway conditions, as applicable
- KT0205 Transportation of personnel and materials, as applicable
- KT0206 Extraction operations, including drilling, cutting, and breaking

#### ***Internal Assessment Criteria***

- IAC0201 Describe and explain various machine operations in the applicable work cycle

## **2.4. KM-03-KT03: Drilling machines (70%)**

### ***Topic elements to be covered include:***

- KT0301 Common types of drilling machines, including percussion, rotary, drifter, raise-borers, long-stroke hydraulic, core, top-hammer, and down-the-hole, as applicable
- KT0302 Common drilling processes and procedures, including construction, splitting, breaking, intersecting hole, face, cover, de-watering, support, sample, directional, core, auger, blast-hole, water-well, exploration drilling and raise-boring processes, as applicable
- KT0303 Basic construction of drilling machines, controls, and operational application
- KT0304 Operating limits and possible malfunction, including struck drill tool, inadequate machine performance, water in compressed air, inadequate lubrication, inadequate air, or water pressure, as applicable
- KT0304 Operating limitations of drilling machines
- KT0305 Cost of drilling machines
- KT0306 Care and maintenance principles, including impact of downtime
- KT0307 Workplace preparation requirements, as applicable

### ***Internal Assessment Criteria***

- IAC0301 Describe and explain construction, application, functions and operational limits
- IAC0302 Describe the safety precautions related to the operational limits
- IAC0303 Describe the basic principles of equipment maintenance

## **2.5. KM-02-KT04: Explosives (10%)**

### ***Topic elements to be covered include:***

- KT0401 Functions of explosives
- KT0402 Handling, storage, and transportation of explosives
- KT0403 Legislation related to explosives
- KT0404 Hazards related to explosives
- KT0405 Identification and reporting requirements relating to explosives and misfires

### ***Internal Assessment Criteria***

- IAC0401 Identify the types of explosive and what the reporting requirements are if found or encountered

## 2.6. Provider Programme Accreditation Criteria

### 2.6.1. Physical Requirements

Skills Development Providers	Assessment Centres
<b>Equipment &amp; Tools</b>	<b>Equipment &amp; Tools</b>
<ul style="list-style-type: none"> <li>OSHE and operational training facilities, plant equipment and resources</li> </ul>	<ul style="list-style-type: none"> <li>OSHE and operational training facilities, plant equipment and resources</li> </ul>
<b>Consumables</b>	<b>Consumables</b>
<ul style="list-style-type: none"> <li>OSHE and operational related consumables</li> </ul>	<ul style="list-style-type: none"> <li>OSHE and operational related consumables</li> </ul>

### 2.6.2. Human Resource Requirements

Skills Development Providers	Assessment Centres
<ul style="list-style-type: none"> <li>Suitably qualified and experienced facilitators, with a minimum NQF Level 3 ETDP qualification; and 1 years' experience in Directional Drilling, support personnel and assessors appointed in accordance with the organisation's Quality Management system.</li> </ul>	<ul style="list-style-type: none"> <li>Suitably qualified and experienced facilitators, with a minimum NQF Level 3 ETDP qualification; and 1 years' experience in Directional Drilling, support personnel and assessors appointed in accordance with the organisation's Quality Management system.</li> </ul>

## 2.7. Legal Requirements

Skills Development Providers	Assessment Centres
<ul style="list-style-type: none"> <li>Registered Skills Development Providers (SDP) will comply with the requirements of the following, including all amendments, regulations, and directives, as applicable:</li> <li>Occupational Health and Safety Act 85 of 1993</li> <li>Mine Health and Safety Act 29 of 1996</li> <li>Labour Relations Act 66 of 1995 <ul style="list-style-type: none"> <li>The Basic Conditions of Employment Act 75 of 1997</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Registered Skills Development Providers (SDP) will comply with the requirements of the following, including all amendments, regulations, and directives, as applicable:</li> <li>Occupational Health and Safety Act 85 of 1993</li> <li>Mine Health and Safety Act 29 of 1996</li> <li>Labour Relations Act 66 of 1995 <ul style="list-style-type: none"> <li>The Basic Conditions of Employment Act 75 of 1997</li> </ul> </li> </ul>

## 2.8. Critical Topics to be Assessed Externally for the Knowledge Module

None



### **3. 900155-000-00-KM-02, Components, controls, and consumables, NQF Level 3, Credits 4**

#### **3.1. Purpose of the Knowledge Modules**

The main focus of the learning in this knowledge module is to build an understanding of the role, function and purpose of electrical and mechanical components, equipment controls and related consumables

The learning will enable learners to demonstrate an understanding of:

- KM-04-KT01: Electrical components (10%)
- KM-04-KT02: Mechanical components (10%)
- KM-04-KT03: Machine controls (70%)
- KM-04-KT04: Consumables (10%)

#### **3.2. Guidelines for Topics**

##### **3.2.0.KM-04- Electrical components (20%)**

***Topic elements to be covered include:***

- KT0101 Battery operated machines, as applicable
- KT0102 Trailing cable machines, including cables drums and reels, as applicable
- KT0103 Electrical motors and components
- KT0104 Lights and lighting systems
- KT0105 Alarm systems
- KT0106 Electrical hazards
- KT0107 Electrical safety devices, such as lock-out, overload, no-voltage, earth-leakage, emergency stop and proximity devices, as applicable
- KT0108 Flameproofing principles, as applicable
- KT0109 Maintenance requirements

##### ***Internal Assessment Criteria***

- IAC0101 Describe application and functions of the electrical components

##### **3.2.1.KM-04-KT02: Mechanical components (20%)**

***Topic elements to be covered include:***

- KT0201 Basic principles of mechanical systems, including prime-mover; chassis or frame; wheels, tracks, or free-standing; positioners; booms or masts, feed systems, drilling tools and bits; compressors; controls and safety systems, as applicable
- KT0202 Basic principles of hydraulic systems, including pneumatic and hydra-power, hydraulic motors, pumps, booster pumps and jacks



- KT0203 Hazards related to hydraulic systems, including stored energy
- KT0204 Safety canopies, guards and roll over protection devices
- KT0205 Diesel engines and related systems, including filters, flame arrestors and exhaust scrubbers
- KT0206 Diesel-electric systems
- KT0207 Safety systems, including lock-out, brakes, machine cut-out systems
- KT0208 Maintenance requirements

#### ***Internal Assessment Criteria***

- IAC0201 Describe application and functions of the mechanical components in the applicable work cycle

#### **3.2.2.KM-04-KT03: Machine controls (40%)**

##### ***Topic elements to be covered include:***

- KT0301 Basic on-board or remote, controls, including stop-start and emergency switches, movement, steering, tramming, positioning, feeding and braking controls, as applicable
- KT0302 Operating controls, including joysticks for moving, tramming, lifting, lowering, tilting, slewing, roll-over, extension, and retraction, drilling and feeding, as applicable
- KT0303 On-board safety systems including automatic fuel cut-off, gas detection, mechanical lock-out and fire extinguishing systems, as applicable
- KT0304 Equipment monitoring and control systems; including on-board or remote monitoring; including the necessary data capturing and gathering, charting, or graphing and associated calculations, such as drilling curves, target inclination, water level, flow-rate, buoyancy control, forces during drilling, make-up torque, reading topographical maps and taking compass bearings, as applicable
- KT0305 Instrumentation and panels, including, lights, gauges, and flameproof panels, as applicable
- KT0306 Maintenance requirements, including daily checks

#### ***Internal Assessment Criteria***

- IAC0301 Describe application and functions of the equipment control components

#### **3.2.3.KM-04-KT04: Consumables (20%)**

##### ***Topic elements to be covered include:***

- KT0401 Fluids, including diesel fuel, lubricants, and coolants
- KT0402 Tyres, trailing cables, hoses
- KT0403 Tools and equipment, including drill tools and bits, jumpers, casing, and hand tools, as applicable

### **Internal Assessment Criteria**

- IAC0401 Describe application and functions of the consumables

### **3.3. Provider Programme Accreditation Criteria**

#### **3.3.1. Physical Requirements**

<b>Skills Development Providers</b>	<b>Assessment Centres</b>
<b>Equipment &amp; Tools</b>	<b>Equipment &amp; Tools</b>
<ul style="list-style-type: none"> <li>• OSHE and operational training facilities, plant equipment and resources</li> </ul>	<ul style="list-style-type: none"> <li>• OSHE and operational training facilities, plant equipment and resources</li> </ul>
<b>Consumables</b>	<b>Consumables</b>
<ul style="list-style-type: none"> <li>• OSHE and operational related consumables</li> </ul>	<ul style="list-style-type: none"> <li>• OSHE and operational related consumables</li> </ul>

#### **3.3.2. Human Resource Requirements**

<b>Skills Development Providers</b>	<b>Assessment Centres</b>
<ul style="list-style-type: none"> <li>• Suitably qualified and experienced facilitators, with a minimum NQF Level 3 ETDP qualification; and 1 years' experience in Directional Drilling, support personnel and assessors appointed in accordance with the organisation's Quality Management system.</li> </ul>	<ul style="list-style-type: none"> <li>• Suitably qualified and experienced facilitators, with a minimum NQF Level 3 ETDP qualification; and 1 years' experience in Directional Drilling, support personnel and assessors appointed in accordance with the organisation's Quality Management system.</li> </ul>

### **3.4. Legal Requirements**

<b>Skills Development Providers</b>	<b>Assessment Centres</b>
<ul style="list-style-type: none"> <li>• Registered Skills Development Providers (SDP) will comply with the requirements of the following, including all amendments, regulations, and directives, as applicable:</li> <li>• Occupational Health and Safety Act 85 of 1993</li> <li>• Mine Health and Safety Act 29 of 1996</li> <li>• Labour Relations Act 66 of 1995</li> <li>• The Basic Conditions of Employment Act 75 of 1997</li> </ul>	<ul style="list-style-type: none"> <li>• Registered Skills Development Providers (SDP) will comply with the requirements of the following, including all amendments, regulations, and directives, as applicable:</li> <li>• Occupational Health and Safety Act 85 of 1993</li> <li>• Mine Health and Safety Act 29 of 1996</li> <li>• Labour Relations Act 66 of 1995               <ul style="list-style-type: none"> <li>• The Basic Conditions of Employment Act 75 of 1997</li> </ul> </li> </ul>

### **3.5. Critical Topics to be Assessed Externally for the Knowledge Module**

None

## **4. 900156-000-00-KM-01, Work team supervision, NQF Level 3, Credits 4**

### **4.1. Purpose of the Knowledge Modules**

The main focus of the learning in this knowledge module is to build an understanding of the basic principles and processes of supervising the work team

The learning will enable learners to demonstrate an understanding of:

- KM-05-KT01: Self-management (40%)
- KM-05-KT02: Plan, organise, lead and control activities (60%)

### **4.2. Guidelines for Topics**

#### **4.3. KM-05-KT01: Self-management (40%)**

**Topic elements to be covered include:**

- KT0101 Time management
- KT0102 Individual and group conflict management
- KT0103 Individual and group conflict management
- KT0104 Stress management

#### **Internal Assessment Criteria**

- IAC0101 Describe and explain the elements of self-management

#### **4.4. KM-05-KT02: Plan, organise, lead and control activities (60%)**

**Topic elements to be covered include:**

- KT0201 Principles and processes of planning and problem solving, including objectives, feasibility, task scheduling, time scheduling, resources, contingency
- KT0202 Principles and processes of organising, including allocation of labour, materials, tools machines and equipment
- KT0203 Principles and techniques of leading, including authority, responsibility, accountability, facilitating and empowering
- KT0204 Principles of motivation, including rewarding, recognition, encouragement, fostering team work, participating in decisions and leading by example
- KT0205 Methods of improving work performance, including coaching, mentoring, proper job instructions, verbal warning, counselling, disciplinary action, feedback and communication
- KT0206 Principles and processes of controlling activities, including setting standards, measuring performance, evaluating performance, corrective action

#### **Internal Assessment Criteria and**

- IAC0201 Describe and explain the principles and procedures of planning, organising, leading and controlling
- IAC0202 Describe and explain the principles of motivation
- IAC0203 Describe the methods of improving work performance

#### 4.5. Provider Programme Accreditation Criteria

##### 4.5.1. Physical Requirements

Skills Development Providers	Assessment Centres
<b>Equipment &amp; Tools</b>	<b>Equipment &amp; Tools</b>
<ul style="list-style-type: none"> <li>OSHE and operational training facilities, plant equipment and resources</li> </ul>	<ul style="list-style-type: none"> <li>OSHE and operational training facilities, plant equipment and resources</li> </ul>
<b>Consumables</b>	<b>Consumables</b>
<ul style="list-style-type: none"> <li>OSHE and operational related consumables</li> </ul>	<ul style="list-style-type: none"> <li>OSHE and operational related consumables</li> </ul>

##### 4.5.2. Human Resource Requirements

Skills Development Providers	Assessment Centres
<ul style="list-style-type: none"> <li>Suitably qualified and experienced facilitators, with a minimum NQF Level 3 ETDP qualification; and 1 years' experience in Directional Drilling, support personnel and assessors appointed in accordance with the organisation's Quality Management system.</li> </ul>	<ul style="list-style-type: none"> <li>Suitably qualified and experienced facilitators, with a minimum NQF Level 3 ETDP qualification; and 1 years' experience in Directional Drilling, support personnel and assessors appointed in accordance with the organisation's Quality Management system.</li> </ul>

#### 4.6. Legal Requirements

Skills Development Providers	Assessment Centres
<ul style="list-style-type: none"> <li>Registered Skills Development Providers (SDP) will comply with the requirements of the following, including all amendments, regulations, and directives, as applicable:</li> <li>Occupational Health and Safety Act 85 of 1993</li> <li>Mine Health and Safety Act 29 of 1996</li> <li>Labour Relations Act 66 of 1995 <ul style="list-style-type: none"> <li>The Basic Conditions of Employment Act 75 of 1997</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Registered Skills Development Providers (SDP) will comply with the requirements of the following, including all amendments, regulations, and directives, as applicable:</li> <li>Occupational Health and Safety Act 85 of 1993</li> <li>Mine Health and Safety Act 29 of 1996</li> <li>Labour Relations Act 66 of 1995 <ul style="list-style-type: none"> <li>The Basic Conditions of Employment Act 75 of 1997</li> </ul> </li> </ul>

#### 4.7. Critical Topics to be Assessed Externally for the Knowledge Module

None

## SECTION 3B APPLICATION MODULE SPECIFICATIONS

List of Application Module Specifications

### Compulsory module/s

- 900134-000-00-PM-01 Apply, exercise, and ensure safety, health and environmental measures and procedures, NQF Level 2, Credits 4
- 900155-000-00-PM-01 Perform pre-operational activities, NQF Level 3, Credits 4

**A learner may choose any of the below electives:**

#### Elective module 1: Underground hardrock operations

- 900165-000-00-PM-01 Operate an exploration drilling machine in an Underground Hardrock operation, NQF Level 3, Credits 12

#### Elective module 2: Underground coal operations

- 900166-000-00-PM-01 Operate an exploration drilling machine in an Underground Coal operation, NQF Level 3, Credits 12

#### Elective module 3: Surface operations

- 900167-000-00-PM-01 Operate an exploration drilling machine on a Surface operation, NQF Level 3, Credits 12

## **0. 900134-000-00-PM-01, Apply, exercise, and ensure safety, health and environmental measures and procedure, NQF Level 2, Credits 4**

### **0.0. Purpose of the Practical Skill Modules**

The focus of the learning in this module is on providing the learner an opportunity to develop the skills and competency required to apply, exercise, and ensure safety, health, and environmental requirements, in accordance with statutory, regulatory, and organisational procedures, policies, codes of practice standards and agreements; determine environmental conditions; and take appropriate action, as applicable

The learner will be required to

- PM-01-PS01 Complete safety, health, and environmental activities
- PM-01-PS02 Deal with ground and rock strata conditions

### **0.1. Guidelines for Practical Skills**

#### **0.2. PM-01-PS01 Complete safety, health, and environmental activities**

##### ***Scope of Practical Skill***

Given PPE, resources, and a controlled environment the learner must be able to

- PA0101 Select the appropriate personal protective equipment (PPE); confirm that all PPE is fit for purpose and in good working order; use PPE
- PA0102 Complete shift procedures; inspect and use cap lamps and batteries, as applicable; inspect and use self-rescuers, as applicable; complete lamproom procedures, as applicable
- PA0103 Inspect hand-tools, machines, and equipment; confirm hand-tools, machines and equipment are functional and fit for purpose; use hand-tools, machines, and equipment, as applicable
- PA0104 Lift and carry materials and equipment by hand, to avoid injuries and in accordance with health, safety, and ergonomic requirements; as applicable
- PA0105 Lift and move a load, using a mechanical hoist, manual or powered, in accordance with safe working practices and procedures, as applicable
- PA0106 Apply and ensure health, hygiene, safety and environmental measures and procedures for examining the workplace; inspect the work area; identify hazards, such as working in the proximity of moving machinery; unsafe ground conditions; water accumulations; unsafe underfoot conditions; unsafe ground conditions; exposure to unsafe electrical connections; working in unsafe areas; close to open excavations; in steeply inclined excavations; on slippery surfaces; over water of unknown depth, when encountering explosives, accessories, misfires and old explosives; take the appropriate action, including safeguarding against unauthorised entry, and follow signs, as applicable
- PA0107 Respond to and follow emergency procedures for seismic or earthquake events, flooding, fires, power failures, accidents to persons and workplace accidents
- PA0108 Plug leaks or inundation, where applicable



- PA0109 Follow traveling procedures, including personnel carriers and conveyances, as applicable; travel includes personnel carriers/ conveyances, travelling ways and routes, queuing, entering, and leaving personnel carriers/ carriages and conduct inside personnel carriers/ conveyances; and may include boarding/ alighting conveyors and chairlifts
- PA0110 Use the communication system, as applicable
- PA0111 Check, monitor and measure for gases, as applicable
- PA0112 Check, monitor and measure dry and wet bulb temperatures, as applicable
- PA0113 Determine and address environmental conditions, as applicable; check, monitor and measure ventilation, as applicable
- PA0114 Identify and report explosives; identify, demarcate, and plug misfires, as applicable
- PA0115 Apply fire prevention and response processes and procedures
- PA0116 Use a hand-held fire extinguisher
- PA0117 Carry out continuous risk assessment, including health, hygiene, safety, and environmental conditions; which may include air-borne pollutants, water, illumination, noise, fire and weather conditions, and fumes/ smoke; as applicable; take the appropriate action; taking measures to prevent injuries, property damage and time delays
- PA0118 Complete emergency preparedness and response processes and procedures, as required
- PA0119 Complete reporting as required

### ***Applied Knowledge***

- AK0101 Organisational, legislative, and regulatory requirements, standards, policies, processes, and procedures
- AK0102 Ground and strata control procedures
- AK0103 Hazard identification and risk assessment
- AK0104 Determining environmental conditions, as applicable
- AK0105 Identifying and dealing with explosives, as applicable
- AK0106 Emergency preparedness and response policies, procedures, and processes

### ***Internal Assessment Criteria***

- IAC0101 Shift operations are completed, in accordance with requirements
- IAC0102 Inspections are completed; including check-lists, as required, in accordance with requirements
- IAC0103 Activities are completed; and procedures complied with; in accordance with requirements
- IAC0104 Continuous risk assessment is completed in accordance with requirements
- IAC0105 Emergency preparedness and response is completed, in accordance with requirements



- IAC0106 Reporting is completed as required
- IAC0107 Understanding of the procedures and processes is demonstrated

### **1.2.3. PM-01-PS02 Deal with ground and strata conditions**

- PA0201 Select the required PPE; inspect and confirm that all PPE is fit for purpose and in good working order
- PA0202 Select the required tools and equipment; confirm that all tools and equipment are fit for purpose and in good working order; complete pre-use checklists, as applicable
- PA0203 Follow health, hygiene, safety and environmental measures and procedures for inspecting the workplace; identify deviations and take remedial action; including actions when encountering work-related hazards, such as working in the proximity of moving machinery, close to open excavations, under unsafe roof or sidewalls and in steeply inclined excavations, on slippery surfaces, and over water of unknown depth; take appropriate action when encountering explosives, accessories and misfires; and follow signs; as applicable
- PA0204 Identify relevant geological, ground and strata conditions
- PA0205 Identify relevant mining induced ground conditions
- PA0206 Determine and select the appropriate action to be taken when encountering unsafe and mining induced ground conditions, in terms of identification, separation and reporting; including demarcation; method, size and type of support to be installed, as applicable; in accordance with operational requirements, as applicable
- PA0207 Bar down loose rocks
- PA0208 Install appropriate barricades, as applicable
- PA0209 Carry out continuous risk assessment, including environmental conditions, such as air-borne pollutants, water, illumination, noise, fire and weather conditions, and fumes/ smoke; as applicable; take the appropriate action; and take measures to prevent injuries, property damage and time delays
- PA0210 Complete reporting as required

#### ***Applied Knowledge***

- AK0201 Hazard identification and risk assessment
- AK0202 Determining and addressing environmental conditions, as applicable; checking, monitoring, and measuring ventilation, as applicable
- AK0203 Barring equipment and tools, as applicable
- AK0204 Dealing with explosives, as applicable

#### ***Internal Assessment Criteria***

- IAC0201 Shift operations are completed, in accordance with requirements
- IAC0202 Inspections are completed; including check-lists, as required, in accordance with requirements

- IAC0203 Activities are completed; and procedures complied with; in accordance with requirements
- IAC0204 Continuous risk assessment is completed in accordance with requirements
- IAC0205 Emergency preparedness and response is completed, in accordance with requirements
- IAC0206 Reporting is completed as required
- IAC0207 Understanding of the procedures and processes is demonstrated

### **0.3. Provider Programme Accreditation Criteria**

Skills Development Providers will be ISO9000:2015, Quality Management, Certified.

Physical Requirements:

- Training/facilitation resources, including fully equipped classroom and directional Driller operation facilities and equipment, which comply with mining occupational health, safety, and environmental standards.

Assessment tools/instruments.

Relevant learning material.

Human Resource Requirements:

- Suitably qualified and experienced facilitators, with a minimum NQF Level 3 ETDP qualification; and 1 years' experience in machine operations, support personnel and assessors appointed in accordance with the organisation's Quality Management system.

Legal Requirements:

- Registered Skills Development Providers (SDP) will comply with the requirements of the following, including all amendments, regulations, and directives, as applicable:
  - Occupational Health and Safety Act 85 of 1993
  - Mine Health and Safety Act 29 of 1996
  - Labour Relations Act 66 of 1995
  - Mine Health and Safety Act 29 of 1996
  - The Basic Conditions of Employment Act 75 of 1997

### **0.4. Critical Practical Activities to be Assessed Externally**

- Inspections are completed; including check-lists, as required, in accordance with requirements
- Activities are completed; and procedures complied with; in accordance with requirements
- Continuous risk assessment is completed in accordance with requirements
- Emergency preparedness and response is completed, in accordance with requirements

### **0.5. Exemptions**

- None

## **1. 900155-000-00-PM-01, Perform pre-operational activities, NQF Level 3, Credits 4**

### **1.1. Purpose of the Practical Skill Modules**

The focus of the learning in this module is on providing the learner an opportunity to develop the skills required to complete perform pre-operational activities and operate the machine; effectively and safely; apply, exercise, and ensure safety, health and environmental measures and procedures; in accordance with statutory, regulatory, and organisational procedures, policies, codes of practice standards and agreements; and operating requirements

The learner will be required to

- PM-02-PS01: Identify components and controls
- PM-02-PS02: Observe and explain the operation of the machine
- PM-02-PS03: Perform pre-operational checks

### **1.2. Guidelines for Practical Skills**

#### **1.3. PM-02-PS01 Identify components and controls**

##### ***Scope of Practical Skill***

Given PPE, an operational machine, checklists, and a controlled environment the learner must be able to:

- PA0101 Identify components on the machine, including power source, safety features, control, and all other relevant systems, as applicable
- PA0102 Explain the function of the relevant component in the operation of the machine
- PA0103 Describe possible defects, damage, deviations, or wear, including possible causes

##### ***Applied Knowledge***

- AK0101 Specifications and limitations relevant to the components
- AK0102 Common defects, damage, deviations, or wear, including possible causes

##### ***Internal Assessment Criteria***

- IAC0101 All components and controls are correctly identified
- IAC0102 Possible causes of defects, damage, deviations, or wear are described
- IAC0103 Understanding of systems and controls is demonstrated

#### **1.4. PM-02-PS02 Observe and explain the operation of the machine**

##### ***Scope of Practical Skill***

Given PPE, an operational machine, and a controlled environment the learner must be able to:

- PA0201 Observe the operation of the machine
- PA0202 Observe the proper mix and recirculation of drilling fluid

- PA0203 Observe the sampling processes
- PA0204 Describe and explain the operation and sampling processes
- PA0205 Describe and explain the monitoring and control of the operation and sampling processes
- PA0206 Describe the operational limitations of the machine

### ***Applied Knowledge***

- AK0201 Relevant specifications and operational limitations
- AK0202 Operating and sampling procedures and processes, including reporting
- AK0203 Sensory cues for damage, deviations, defects, or wear

### ***Internal Assessment Criteria***

- IAC0201 Explanations of the operation of the machine, its limitations and sampling processes are correct
- IAC0202 Explanation of the sensory cues for defects, damage, deviations, or wear are correct
- IAC0203 Understanding of the principles of operation and sampling is demonstrated

## **1.5. PM-02-PS03 Perform pre-operational checks**

### ***Scope of Practical Skill***

Given PPE, an operational machine, and a controlled environment the learner must be able to:

- PA0301 Inspect area, identify potential hazards, and take appropriate action - continuous risk assessment
- PA0302 Perform pre-operational check and identify any defects, deviations, damage, or wear
- PA0303 Complete the pre-operational machine checklist
- PA0304 Report any defects, damage, deviations, or wear

### ***Applied Knowledge***

- AK0301 Machine specifications
- AK0302 Hazards, safety, health, and environment related issues
- AK0303 Signs of defects, damage, deviations, and their possible causes

### ***Internal Assessment Criteria***

- IAC0301 Pre-operational safety and machine check lists are completed correctly
- IAC0302 Checks were carried out safely
- IAC0303 All defects, damage, deviations, and wear are identified and reported

- IAC0304 Understanding of the pre-operational safety check is demonstrated

## 1.6. Provider Programme Accreditation Criteria

Skills Development Providers will be ISO9000:2015, Quality Management, Certified.

Physical Requirements:

- Training/facilitation resources, including fully equipped classroom and directional Driller operation facilities and equipment, which comply with mining occupational health, safety, and environmental standards.

Assessment tools/instruments.

Relevant learning material.

Human Resource Requirements:

- Suitably qualified and experienced facilitators, with a minimum NQF Level 3 ETDP qualification; and 1 years' experience in machine operations, support personnel and assessors appointed in accordance with the organisation's Quality Management system.

Legal Requirements:

- Registered Skills Development Providers (SDP) will comply with the requirements of the following, including all amendments, regulations, and directives, as applicable:
  - Occupational Health and Safety Act 85 of 1993
  - Mine Health and Safety Act 29 of 1996
  - Labour Relations Act 66 of 1995
  - Mine Health and Safety Act 29 of 1996
  - The Basic Conditions of Employment Act 75 of 1997

## 1.7. Critical Practical Activities to be Assessed Externally

- Inspections are completed; including check-lists, as required, in accordance with requirements
- Activities are completed; and procedures complied with; in accordance with requirements
- Continuous risk assessment is completed in accordance with requirements
- Emergency preparedness and response is completed, in accordance with requirements

## 1.8. Exemptions

- None

## **2. 900165-000-00-PM-01 Operate an exploration drilling machine in an Underground Hardrock operation, NQF Level 3, Credits 12**

### **2.1. Purpose of the Practical Skill Modules**

The focus of the learning in this module is on providing the learner an opportunity to perform operations on the machine

The learner will be required to:

- PM-03-PS01: Start-up and shut-down the machine
- PM-03-PS02: Operate the machine

### **2.2. Guidelines for Practical Skills**

#### **2.2.1. PM-03-PS01: Start-up and shut-down the machine**

##### ***Scope of Practical Skill***

Given an operational machine, and a controlled environment the learner must be able to:

- PA0101 Describe the start-up and shut-down procedure
- PA0102 Start-up the machine
- PA0103 Check that the machine is running according to specified requirements
- PA0104 Complete all required checks and tests
- PA0105 Identify, record, and report all defects, damage, deviations, and wear
- PA0106 Shut down, isolate, and lock out the machine

##### ***Applied Knowledge***

- AK0101 Machine specifications
- AK0102 Correct sequences for starting up and shutting down

##### ***Internal Assessment Criteria***

- IAC0101 Machine is started-up and shut down according to the relevant procedures
- IAC0102 The pre-use checklist is completed correctly
- IAC0103 All defects, damage, deviations, and wear are identified and reported correctly
- IAC0104 Understanding of start-up and shut-down sequences demonstrated

### **2.3. PM-03-PS02: Operate the machine**

##### ***Scope of Practical Skill***

Given an operational machine, and personnel as required in a controlled environment and variety of simulated conditions the learner must be able to:

- PA0201 Energise the machine, move, tram, locate, pre-inspect, position, set up and perform drilling operations, as applicable

- PA0202 Carry out sampling activities, as applicable
- PA0203 Describe the reason and purpose for each action that must be completed and describe all relevant health, safety, and environmental precautions
- PA0204 Operate the machine and take samples safely, including interaction with other operators, assistants, or bystanders, as applicable
- PA0205 Monitor machine instruments, gauges, safety devices and control performance,
- PA0206 Change consumables
- PA0207 Identify and report defects, damage, deviations, and wear
- PA0208 Demonstrate the use of on-board safety systems
- PA0209 Perform emergency shut-downs
- PA0210 Park, shut down, isolate, and lock out the machine. Carry out housekeeping including machine cleaning, as required.
- PA0211 Compile reports as required

### ***Applied Knowledge***

- AK0201 Operational specifications, including drilling plans, as applicable
- AK0202 Hazards and safety, health, and environment related issues during operations
- AK0203 Sensory cues for defects, damage, deviations, and wear

### ***Internal Assessment Criteria***

- IAC0201 The machine is operated in accordance with the operating parameters, the relevant operating procedures and within the limitations of the machine
- IAC0202 All defects, damage, deviations, and wear are reported accurately and correctly
- IAC0203 Understanding of the operation of the machine and sampling processes is demonstrated

## **2.4. Provider Programme Accreditation Criteria**

Skills Development Providers will be ISO9000:2015, Quality Management, Certified.

Physical Requirements:

- Training/facilitation resources, including fully equipped classroom and directional Driller operation facilities and equipment, which comply with mining occupational health, safety, and environmental standards.

Assessment tools/instruments.

Relevant learning material.

Human Resource Requirements:

- Suitably qualified and experienced facilitators, with a minimum NQF Level 3 ETDP qualification; and 1 years' experience in machine operations, support personnel and



assessors appointed in accordance with the organisation's Quality Management system.

Legal Requirements:

- Registered Skills Development Providers (SDP) will comply with the requirements of the following, including all amendments, regulations, and directives, as applicable:
  - Occupational Health and Safety Act 85 of 1993
  - Mine Health and Safety Act 29 of 1996
  - Labour Relations Act 66 of 1995
  - Mine Health and Safety Act 29 of 1996
  - The Basic Conditions of Employment Act 75 of 1997

## **2.5. Critical Practical Activities to be Assessed Externally**

- Inspections are completed; including check-lists, as required, in accordance with requirements
- Activities are completed; and procedures complied with; in accordance with requirements
- Continuous risk assessment is completed in accordance with requirements
- Emergency preparedness and response is completed, in accordance with requirements

## **2.6. Exemptions**

- None

## **3. 900166-000-00-PM-01 Operate an exploration drilling machine in an Underground Coal operation, NQF Level 3, Credits 12**

### **3.1. Purpose of the Practical Skill Modules**

The focus of the learning in this module is on providing the learner an opportunity to perform operations on the machine

The learner will be required to:

- PM-04-PS01: Start-up and shut-down the machine
- PM-04-PS02: Operate the machine

### **3.2. Guidelines for Practical Skills**

#### **3.2.1. PM-04-PS01: Start-up and shut-down the machine**

##### ***Scope of Practical Skill***

Given an operational machine, and a controlled environment the learner must be able to:

- PA0101 Describe the start-up and shut-down procedure
- PA0102 Start-up the machine
- PA0103 Check that the machine is running according to specified requirements



- PA0104 Complete all required checks and tests
- PA0105 Identify, record, and report all defects, damage, deviations, and wear
- PA0106 Shut down, isolate, and lock out the machine

### ***Applied Knowledge***

- AK0101 Machine specifications
- AK0102 Correct sequences for starting up and shutting down

### ***Internal Assessment Criteria***

- IAC0101 Machine is started-up and shut down according to the relevant procedures
- IAC0102 The pre-use checklist is completed correctly
- IAC0103 All defects, damage, deviations, and wear are identified and reported correctly
- IAC0104 Understanding of start-up and shut-down sequences demonstrated

## **3.3. PM-04-PS02: Operate the machine**

### ***Scope of Practical Skill***

Given an operational machine, and personnel as required in a controlled environment and variety of simulated conditions the learner must be able to:

- PA0201 Energise the machine, move, tram, locate, pre-inspect, position, set up and perform drilling operations, as applicable
- PA0202 Carry out sampling activities, as applicable
- PA0203 Describe the reason and purpose for each action that must be completed and describe all relevant health, safety, and environmental precautions
- PA0204 Operate the machine and take samples safely, including interaction with other operators, assistants, or bystanders, as applicable
- PA0205 Monitor machine instruments, gauges, safety devices and control performance,
- PA0206 Change consumables
- PA0207 Identify and report defects, damage, deviations, and wear
- PA0208 Demonstrate the use of on-board safety systems
- PA0209 Perform emergency shut-downs
- PA0210 Park, shut down, isolate, and lock out the machine. Carry out housekeeping including machine cleaning, as required.
- PA0211 Compile reports as required

### ***Applied Knowledge***

- AK0201 Operational specifications, including drilling plans, as applicable

- AK0202 Hazards and safety, health, and environment related issues during operations
- AK0203 Sensory cues for defects, damage, deviations, and wear

### **Internal Assessment Criteria**

- IAC0201 The machine is operated in accordance with the operating parameters, the relevant operating procedures and within the limitations of the machine
- IAC0202 All defects, damage, deviations, and wear are reported accurately and correctly
- IAC0203 Understanding of the operation of the machine and sampling processes is demonstrated

### **3.4. Provider Programme Accreditation Criteria**

Skills Development Providers will be ISO9000:2015, Quality Management, Certified.

Physical Requirements:

- Training/facilitation resources, including fully equipped classroom and directional Driller operation facilities and equipment, which comply with mining occupational health, safety, and environmental standards.

Assessment tools/instruments.

Relevant learning material.

Human Resource Requirements:

- Suitably qualified and experienced facilitators, with a minimum NQF Level 3 ETDP qualification; and 1 years' experience in machine operations, support personnel and assessors appointed in accordance with the organisation's Quality Management system.

Legal Requirements:

- Registered Skills Development Providers (SDP) will comply with the requirements of the following, including all amendments, regulations, and directives, as applicable:
  - Occupational Health and Safety Act 85 of 1993
  - Mine Health and Safety Act 29 of 1996
  - Labour Relations Act 66 of 1995
  - Mine Health and Safety Act 29 of 1996
  - The Basic Conditions of Employment Act 75 of 1997

### **3.5. Critical Practical Activities to be Assessed Externally**

- Inspections are completed; including check-lists, as required, in accordance with requirements
- Activities are completed; and procedures complied with; in accordance with requirements
- Continuous risk assessment is completed in accordance with requirements
- Emergency preparedness and response is completed, in accordance with requirements

### **3.6. Exemptions**

- None

#### **4. 900167-000-00-PM-01 Operate an exploration drilling machine in a Surface mining operation, NQF Level 3, Credits 12**

##### **4.1. Purpose of the Practical Skill Modules**

The focus of the learning in this module is on providing the learner an opportunity to perform operations on the machine

The learner will be required to:

- PM-05-PS01: Start-up and shut-down the machine
- PM-05-PS02: Operate the machine

##### **4.2. Guidelines for Practical Skills**

###### **4.2.1. PM-05-PS01: Start-up and shut-down the machine**

###### ***Scope of Practical Skill***

Given an operational machine, and a controlled environment the learner must be able to:

- PA0101 Describe the start-up and shut-down procedure
- PA0102 Start-up the machine
- PA0103 Check that the machine is running according to specified requirements
- PA0104 Complete all required checks and tests
- PA0105 Identify, record, and report all defects, damage, deviations, and wear
- PA0106 Shut down, isolate, and lock out the machine

###### ***Applied Knowledge***

- AK0101 Machine specifications
- AK0102 Correct sequences for starting up and shutting down

###### ***Internal Assessment Criteria***

- IAC0101 Machine is started-up and shut down according to the relevant procedures
- IAC0102 The pre-use checklist is completed correctly
- IAC0103 All defects, damage, deviations, and wear are identified and reported correctly
- IAC0104 Understanding of start-up and shut-down sequences demonstrated

##### **4.3. PM-05-PS02: Operate the machine**

###### ***Scope of Practical Skill***

Given an operational machine, and personnel as required in a controlled environment and variety of simulated conditions the learner must be able to:

- PA0201 Energise the machine, move, tram, locate, pre-inspect, position, set up and perform drilling operations, as applicable
- PA0202 Carry out sampling activities, as applicable
- PA0203 Describe the reason and purpose for each action that must be completed and describe all relevant health, safety, and environmental precautions
- PA0204 Operate the machine and take samples safely, including interaction with other operators, assistants, or bystanders, as applicable
- PA0205 Monitor machine instruments, gauges, safety devices and control performance,
- PA0206 Change consumables
- PA0207 Identify and report defects, damage, deviations, and wear
- PA0208 Demonstrate the use of on-board safety systems
- PA0209 Perform emergency shut-downs
- PA0210 Park, shut down, isolate, and lock out the machine. Carry out housekeeping including machine cleaning, as required.
- PA0211 Compile reports as required

#### ***Applied Knowledge***

- AK0201 Operational specifications, including drilling plans, as applicable
- AK0202 Hazards and safety, health, and environment related issues during operations
- AK0203 Sensory cues for defects, damage, deviations, and wear

#### ***Internal Assessment Criteria***

- IAC0201 The machine is operated in accordance with the operating parameters, the relevant operating procedures and within the limitations of the machine
- IAC0202 All defects, damage, deviations, and wear are reported accurately and correctly
- IAC0203 Understanding of the operation of the machine and sampling processes is demonstrated

#### **4.4. Provider Programme Accreditation Criteria**

Skills Development Providers will be ISO9000:2015, Quality Management, Certified.

Physical Requirements:

- Training/facilitation resources, including fully equipped classroom and directional Driller operation facilities and equipment, which comply with mining occupational health, safety, and environmental standards.

Assessment tools/instruments.

Relevant learning material.

Human Resource Requirements:

- Suitably qualified and experienced facilitators, with a minimum NQF Level 3 ETDP qualification; and 1 years' experience in machine operations, support personnel and assessors appointed in accordance with the organisation's Quality Management system.

Legal Requirements:

- Registered Skills Development Providers (SDP) will comply with the requirements of the following, including all amendments, regulations, and directives, as applicable:
  - Occupational Health and Safety Act 85 of 1993
  - Mine Health and Safety Act 29 of 1996
  - Labour Relations Act 66 of 1995
  - Mine Health and Safety Act 29 of 1996
  - The Basic Conditions of Employment Act 75 of 1997

#### **4.5. Critical Practical Activities to be Assessed Externally**

- Inspections are completed; including check-lists, as required, in accordance with requirements
- Activities are completed; and procedures complied with; in accordance with requirements
- Continuous risk assessment is completed in accordance with requirements
- Emergency preparedness and response is completed, in accordance with requirements

#### **4.6. Exemptions**

- None