

QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR MINING INDUSTRY



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What are Occupational Standards(OS)?

OS describe what individuals need to do, know and understand in order to carry out a particular job role or function

- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

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Introduction

Qualifications Pack – Rig Mounted Drill Operator

SECTOR: MINING

SUB-SECTOR: Mining Operation

OCCUPATION: Drilling & Cutting

REFERENCE ID: MIN/Q 0202

ALIGNED TO: NCO-2004/8111.40

Brief Job Description: A rig mounted drill operator drives and operates a drill machine which is a self-propelled machine used to drill shallow as well as deep holes in the soil and rock for blasting or for quarry operations. The holes are caused by crushing under percussion and/or by drill bit rotation causing abrasion. The drill operates on pneumatic hydraulic system and uses compressed air as power source. Operating a drill is a specialized task that can be safely performed only with adequate training and experience. Drill operators are also responsible for performing basic maintenance on the machine.

Personal Attributes: This job requires the individual to concentrate on the job at hand and complete it efficiently and effectively without any accidents so diligence and hard-working are desired attributes for individuals performing this role. He must also demonstrate strong work ethics, an ability to communicate courteously with co-workers, and must be good with following instructions of the supervisor.

Job Details

Qualifications Pack Code	MIN/Q 0202		
Job Role	Rig Mounted Drill Operator This job role is applicable in both national and international scenarios		
Credits(NSQF)	TBD	Version number	1.0
Sector	Mining	Drafted on	01/02/2014
Sub-sector	Mining Operation	Last reviewed on	24/03/2014
Occupation	Drilling & Cutting	Next review date	24/03/2017
NSQC Clearance On	18/06/2015		

Job Role		Rig Mounted Drill Operator
Role Description	Drives and operates a drill machine which is a self-propelled machine used to drill shallow as well as deep holes in the soil and rock for blasting or for quarry operations.	
NSQF level	4	
Minimum Educational Qualifications	Preferable Class XII	
Maximum Educational Qualifications	Not applicable	
Training (Suggested but not mandatory)	<ol style="list-style-type: none"> 1. Technical and gallery training as per first schedule, Mining Vocational Training Rules (MVTR) 1966. 2. Heavy Commercial Vehicle Driving License. 	
Minimum Job Entry Age	18 years	
Experience	N.A.	
Applicable National Occupational Standards (NOS)	<p>Compulsory:</p> <ol style="list-style-type: none"> 1. MIN/N 0205 (Prepare Drill) 2. MIN/N 0206 (Perform Drill Operations) 3. MIN/N 0207 (Perform basic maintenance and troubleshooting on Drill) 4. MIN/N 0208 (Carry Out Reporting and Logging - Drill) 5. MIN/N 0204 (Health and Safety) <p>Optional: Not applicable</p>	
Performance Criteria	As described in the relevant OS units	

Definitions

Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Job Role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
OS	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
NOS	NOS are Occupational Standards which apply uniquely in the Indian context.
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Qualifications Pack	Qualifications Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
Unit Code	Unit Code is a unique identifier for an Occupational Standard, which is denoted by an 'N'.
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard.
Organizational Context	Organizational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills or Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.

National Occupational Standard



Overview

This unit is about preparing the Drill for activities that need to be carried out during a shift

Unit Code MIN/N 0205	
Unit Title(Task) Prepare Drill	
Description	This unit is about preparing the Drill for activities that need to be carried out during a shift
Scope	This OS unit/task covers the following: <ul style="list-style-type: none"> • Conducting pre-operation checks to ensure the Drill is safe to use. • Recording details of checking and maintenance
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Conducting pre-operation checks to ensure the Drill is safe to use.	To be competent, the user/individual on the job must be able to: PC1. Adhere to time limits given by supervisor PC2. Check various controls, gauges, warning lamp and other safety devices PC3. Ensure that crown blocks are mounted securely. PC4. Check all hose connections are in order, if using a compress air drill PC5. Check that drilling equipment is in safe operating condition. PC6. Perform visual checks to detect cracks, wear and tear or any damage that could result in structural weakness PC7. Visually inspects to detect cracks or fractures in welded joints. PC8. Apply grease to all greasing pins and pivot points PC9. Check under carriage and superstructure in the drill. PC10. The drilling site is clear of other mine workers to avoid any accidents. PC11. Follow the manufacturer's instructions which apply to the care and safe operation of the Drill. PC12. Keep footplates and steps clean and free from mud, dirt and oil
	Recording details of checking and maintenance

Knowledge and Understanding (K)

<p>A. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. Job specific documents e.g. daily maintenance checklist and importance of the same</p> <p>KA2. Risk and impact of not following defined procedures/work instructions</p> <p>KA3. Escalation matrix for reporting identified problems</p> <p>KA4. Cost of equipment and loss for the company that results from damage of equipment</p> <p>KA5. All direct /indirect cost of accidents to the company</p> <p>KA6. Implications of delays in process to the company</p> <p>KA7. Locally prepared emergency response /disaster management plan.</p> <p>Safety guidelines specified by Directorate General of Mine Safety (DGMS))</p> <p>KA8. Different types of mines and detail of the mine he is working in</p> <p>KA9. Mine Organisation, time keeping, need for discipline and punctuality</p> <p>KA10. Benching in quarries, Dressing of overhangs, Undercuts, Fencing, First aid and Hygiene</p> <p>KA11. Code of traffic in specific areas of mine. Significance of fences</p> <p>KA12. Standing orders in force at the mine. Safety in the vicinity of machinery</p> <p>KA13. Shot-firing and Safety regulations. How and where to take shelter</p> <p>KA14. Tramways and siding, Haulage rooms, Winding rooms, Boilers, Electrical Gears</p> <p>KA15. Duties of workmen under Mines act</p> <p>KA16. Provision of wages, working hours and accident compensation as per Mines act.</p> <p>KA17. Knowledge of mining safety procedures</p> <p>KA18. Outcome of violation of safely procedures</p> <p>KA19. Precautions to be taken when handling explosives</p> <p>KA20. Refresher training as per fourth schedule MVTR (1966) within one month of joining duties following absence from duties for a period exceeding one year.</p>
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<p>B. Technical</p> <p>Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Different types of drills and their specific use.</p> <p>KB2. Proper use and care of machine and cables, picks, bits, sharpening, shaping etc.</p> <p>KB3. Specification and details of blast hole drills used in open-cast mines</p> <p>KB4. Instrument panel, various controls their location and operation</p> <p>KB5. Lubrication of drills</p> <p>KB6. Various levers and switches in order to operate the Drill properly</p> <p>KB7. Different types of drill bits and their uses</p> <p>KB8. Common terminology vis-à-vis drilling</p> <p>KB9. Precautions against falls/gas/coal dust</p> <p>KB10. Routine checks essential before starting drill operations</p> <p>KB11. Common troubles and remedies.</p> <p>KB12. Signage, mining area signs and other safety and emergency signals</p> <p>KB13. Response to emergencies such as fire, accident, major failure etc.</p>
<p>Skills</p>	
<p>A. Core Skills/ Generic Skills</p>	<p>Writing Skills</p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. Fill out check-list /activity logbooks detailing maintenance activities conducted</p> <p>SA2. Fill out administrative forms</p> <p>Reading Skills</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA3. Read operators' manual</p> <p>SA4. Read and understand pre-operation checklist/ activity logbook</p> <p>SA5. Read and comprehend banners /signage</p> <p>Oral Communication (Listening and Speaking skills)</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA6. Communicate with supervisors and peers in a proper manner adhering to the values of respect for individual</p>
	<p>Decision Making</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. make decisions pertaining to the concerned area of work.</p> <p>Plan and Organize</p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB2. plan and organize the work order and jobs</p> <p>SB3. organize all process manuals so that sorting/ accessing information is easy</p>

B. Professional Skills	Customer Centricity
	NA
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB4. detect problems in day to day tasks SB5. discuss possible solution with the supervisor for problem solving SB6. make decisions in emergency conditions
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB7. follow instructions and work on areas of improvement identified SB8. complete the assigned tasks with minimum supervision SB9. complete the job within timelines and quality norms
	Critical Thinking
The user/individual on the job needs to know and understand how to: SB10. use common sense and make judgments during day to day basis SB11. use reasoning skills to identify and resolve basic problems SB12. use intuition to detect any potential problems which could arise	

Prepare Drill

NOS Version Control

NOS Code	MIN/N 0205		
Credits(NSQF)	Level 4	Version number	0.1
Sector	Mining	Drafted on	28/01/2014
Sub-sector	Mining Operation	Last reviewed on	24/03/2014
Occupation	Drilling & Cutting	Next review date	24/03/2017

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National Occupational Standard



Overview

This unit is about performing drilling operation using a rig mounted drill machine

Perform Drill Operations

National Occupational Standard

Unit Code	MIN/N 0206
Unit Title(Task)	Perform Drill Operations
Description	This unit is about performing drilling operation using a rig mounted drill machine
Scope	<p>This OS unit/task covers the following:</p> <ul style="list-style-type: none"> • Travelling of the drill by Trimming or Towing • Positioning and mounting the drill • Perform drilling operation.
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Travelling of the drill by Trimming or Towing	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Plan and organize the job according to given instructions.</p> <p>PC2. Organise daily consumables according to the day's plan.</p> <p>PC3. Operate propelling motor control levers to smoothly move the drill machine in all four directions.</p> <p>PC4. Ensure all necessary precautions are adhered to before towing the drill to a distant site.</p> <p>PC5. Raise drill guide to 1.5m above ground level and make it horizontal to prevent any damage in transit.</p> <p>PC6. Ensure that the OEM prescribed limit for angles of inclination are followed during trimming and setting up of drills.</p>
Positioning and mounting the drill	<p>PC7. Ensure a stable base for mounting the drill.</p> <p>PC8. Avoid accidental fall of drill rod / hammer / bit in the drilled blast hole.</p> <p>PC9. Adjust the tracks by methodically manipulating the positions of oscillation cylinder valve and hydraulic track valve.</p>
Perform drilling Operation	<p>PC10. Follow drill depth plans and ensure quality of holes by dipping and re-drilling before leaving drill area.</p> <p>PC11. Ensure that the highest level of quality is consistently maintained</p> <p>PC12. Ensure all associated products (couplings/rods etc.) are used to their maximum potential, while ensuring their sustainability.</p> <p>PC13. Reduce downtime and wastage.</p> <p>PC14. Demonstrate caution against hazards of drill machine in operation.</p>
Knowledge and Understanding (K)	

MIN/N 0206

Perform Drill Operations

<p>A. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. Types of documentation in organization e.g. daily maintenance checklist and importance of the same</p> <p>KA2. Risk and impact of not following defined procedures/work instructions</p> <p>KA3. Rules and regulations of mine as per standard operating procedure (SOP)</p> <p>KA4. Risk and impact of not following company's SOP</p> <p>KA5. Escalation matrix for reporting identified problems</p> <p>KA6. The duties and responsibilities associated with his job role as per the employer Cost of delays to the company</p> <p>KA7. Direct /Indirect cost of accidents to the company</p> <p>KA8. Locally prepared emergency response /disaster management plan. Safety guidelines specified by Directorate General of Mine Safety (DGMS))</p> <p>KA9. Different types of mines and detail of the mine he is working in.</p> <p>KA10. Mine Organisation, time keeping, need for discipline and punctuality.</p> <p>KA11. Benching in quarries, dressing of overhangs, Undercuts, Fencing, First aid and Hygiene.</p> <p>KA12. Code of traffic in specific areas of mine. Significance of fences.</p> <p>KA13. Standing orders in force at the mine. Safety in the vicinity of machinery.</p> <p>KA14. Shot-firing and Safety regulations. How and where to take shelter.</p> <p>KA15. Tramways and siding, Haulage rooms, Winding rooms, Boilers, Electrical Gears.</p> <p>KA16. Duties of workmen under Mines act.</p> <p>KA17. Provision of wages, working hours and accident compensation as per Mines act.</p> <p>KA18. Knowledge of mining safety procedures.</p> <p>KA19. Outcome of violation of safely procedures.</p> <p>KA20. Precautions to be taken when handling explosives.</p> <p>KA21. Refresher training as per fourth schedule MVTR (1966) within one month of joining duties following absence from duties for a period exceeding one year.</p>
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MIN/N 0206

Perform Drill Operations

B. Technical	The user/individual on the job needs to know and understand:
Knowledge	<p>KB1. General Knowledge about Drilling Machines. Diesel Engines, Electric Motors and compressors</p> <p>KB2. Different types of drills and their specific use.</p> <p>KB3. Various levers and switches in order to operate the Drill properly</p> <p>KB4. Drilling pattern and sequence of operations.</p> <p>KB5. Different types of drill bits and their uses</p> <p>KB6. Common terminology vis-à-vis drilling</p> <p>KB7. Operation of different assemblies and sub-assemblies such as under-carriage, compressors, hydraulic/pneumatic systems.</p> <p>KB8. Drill safety devices fitted on compressors</p> <p>KB9. Correct sequence of operation of different levers.</p> <p>KB10. Transmissions of compressed air from compressor to Drill head.</p> <p>KB11. Selection of proper rotation speed and effect of excessive speeds on bit life</p> <p>KB12. Specification and details of blast hole drills used in open-cast mines</p> <p>KB13. Instrument panel, various controls their location and operation</p> <p>KB14. Lubrication system of drills</p> <p>KB15. Drill hole design and impact of poor drill hole design on blasting</p> <p>KB16. Understanding of fly rocks and air-blast</p> <p>KB17. Inclined hole, azimuth, deviation, dip</p> <p>KB18. Safety during drilling, marching and other operations</p> <p>KB19. Dangers from loose house joints and defective Houses.</p> <p>KB20. Comply with all company Quality, Health, Safety and Environment policies and procedures</p> <p>KB21. Signage, mining area signs and other safety and emergency signals</p> <p>KB22. Wet cutting, drilling method, drilling pattern</p> <p>KB23. Dangers from cutting/ drilling in stone band</p> <p>KB24. Slope failures, Joint spacing, Caving</p> <p>KB25. Fleeting of ore cutting machine on gradient</p> <p>KB26. Keeping machinery reasonably free from dust.</p> <p>KB27. Applicable regulations</p>

Perform Drill Operations

Skills (S)	
A. Core Skills/ Generic Skills	Writing Skills
	The user/ individual on the job needs to know and understand how to: SA1. Fill out check-list /activity logbooks detailing maintenance activities conducted SA2. Fill out administrative forms
	Reading Skills
	The user/individual on the job needs to know and understand how to: SA3. Read operators' manual SA4. Read and understand pre-operation checklist/ activity logbook SA5. Read and comprehend banners /signage
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA6. Communicate with supervisors and peers in a proper manner adhering to the values of respect for individual
B. Professional Skills	Decision Making
	The user/individual on the job needs to know and understand how to: SB1. make decisions pertaining to the concerned area of work.
	Plan and Organize
	The user/individual on the job needs to know and understand how to: SB2. plan and organize the work order and jobs SB3. organize all process manuals so that sorting/ accessing information is easy
	Customer Centricity
	NA
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB4. detect problems in day to day tasks SB5. discuss possible solution with the supervisor for problem solving SB6. make decisions in emergency conditions
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB7. follow instructions and work on areas of improvement identified SB8. complete the assigned tasks with minimum supervision SB9. complete the job within timelines and quality norms
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB10. use common sense and make judgments during day to day basis SB11. use reasoning skills to identify and resolve basic problems SB12. use intuition to detect any potential problems which could arise

Perform Drill Operations

NOS Version Control

NOS Code	MIN/N 0206		
Credits(NSQF)	TBD	Version number	0.1
Sector	Mining	Drafted on	27/01/2014
Sub-sector	Mining Operation	Last reviewed on	24/03/2014
Occupation	Drilling & Cutting	Next review date	24/03/2017

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National Occupational Standard



Overview

This unit is about performing routine maintenance and troubleshooting on the Drill

Unit Code MIN/N 0207	
Unit Title(Task) Perform routine maintenance and troubleshooting on the Drill	
Description	This unit is about performing routine maintenance and troubleshooting tasks on the Drill
Scope	<p>This OS unit/task covers the following:</p> <ul style="list-style-type: none"> • Routine maintenance in accordance with the manufacturer's recommendations and company procedures • Basic diagnostics and Troubleshooting
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Routine maintenance in accordance with the manufacturer's recommendations and company procedures	To be a competent Drill operator, the individual on the job must also be able to:
	PC1. Track machine operating hours to assess the right service schedule.
	PC2. Clean air filter dust bowls
	PC3. Clean footplates, pedals and steps free from mud, dirt, ice and snow
	PC4. Drain water and sediment /fuel separators
	PC5. Replenish coolants, lubricants and fluids
	PC6. Grease all greasing pins and pivot points
	PC7. Check battery levels and condition of the terminals and carrying out minor adjustments if required.
	PC8. Check and maintain the tyre rims, air pressure, wheel nuts and treads.
	PC9. Check structural safety of the drill machine.
Basic diagnostics and Troubleshooting	PC10. Complete timely and legibly daily/weekly maintenance sheets
	PC11. Ensure the machine is on firm and level ground before attempting to carry out any maintenance activity.
	PC12. Ensure that no maintenance task on the engine is performed when running or still hot.
	PC13. Ensure proper Lock out and Tag out scenario to avoid any untoward incident triggered due to unknowingly operation of machine / system under maintenance
	PC14. Assess when the problem is beyond his competence and report the problem to suitably qualified and competent personnel
	PC15. Complete timely and legibly defect sheets as provided by the company

Knowledge and Understanding (K)	
<p>A. Organizational</p> <p>Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. Types of documentation in organization e.g. daily maintenance checklist and importance of the same</p> <p>KA2. Risk and impact of not following defined procedures/work instructions</p> <p>KA3. Rules and regulations of mine as per standard operating procedure (SOP)</p> <p>KA4. Risk and impact of not following company's SOP</p> <p>KA5. Escalation matrix for reporting identified problems</p> <p>Safety guidelines specified by Directorate General of Mine Safety (DGMS))</p> <p>KA6. Different types of mines and detail of the mine he is working in</p> <p>KA7. Mine Organisation, time keeping, need for discipline and punctuality</p> <p>KA8. Benching in quarries, Dressing of overhangs, Undercuts, Fencing, First aid and Hygiene</p> <p>KA9. Code of practice in specific areas of mine. Significance of fences</p> <p>KA10. Standing orders in force at the mine. Safety in the vicinity of machinery</p> <p>KA11. Shot-firing and Safety regulations. How and where to take shelter</p> <p>KA12. Tramways and siding, Haulage rooms, Winding rooms, Boilers, Electrical Gears.</p> <p>KA13. Duties of workmen under Mines act</p> <p>KA14. Provision of wages and working hours as per Mines act</p> <p>KA15. Knowledge of mining safety procedures</p> <p>KA16. Outcome of violation of safely procedures</p> <p>KA17. Precautions to be taken when handling explosives</p> <p>KA18. Refresher training as per fourth schedule MVTR (1966) within one month of joining duties following absence from duties for a period exceeding one year.</p>
<p>B. Technical</p> <p>Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Different types of drills and their specific use</p> <p>KB2. Operation of different assemblies and sub-assemblies such as under-carriage, compressors, hydraulic/pneumatic systems.</p> <p>KB3. Specification and details of blast hole drills used in open-cast mines</p> <p>KB4. Instrument panel, various controls their location and operation</p> <p>KB5. Lubrication of drills</p> <p>KB6. Various levers and switches in order to operate the Drill properly</p>

MIN/N 0207

Drill Maintenance and troubleshooting

	<p>KB7. Drilling pattern and sequence of operations.</p> <p>KB8. Different types of drill bits and their uses</p> <p>KB9. Common terminology vis-à-vis drilling</p> <p>KB10. Safety during drilling, marching and other operations</p> <p>KB11. comply with all company Quality, Health, Safety and Environment policies and procedures</p> <p>KB12. Signage, mining area signs and other safety and emergency signals</p> <p>KB13. Wet cutting, drilling method, drilling pattern</p> <p>KB14. Dangers from cutting/ drilling in stone band,</p> <p>KB15. Fleeting of ore cutting machine on gradient</p> <p>KB16. Keeping machinery reasonably free from dust.</p> <p>KB17. Response to emergencies such as fire, accident, major failure etc</p>
Skills (S)	
A. Core Skills/ Generic Skills	Writing Skills
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. Fill out check-list /activity logbooks detailing maintenance activities conducted</p> <p>SA2. Fill out administrative forms</p>
	Reading Skills
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA3. Read operators' manual</p> <p>SA4. Read and understand pre-operation checklist/ activity logbook</p> <p>SA5. Read and comprehend banners /signage</p>
B. Professional Skills	Oral Communication (Listening and Speaking skills)
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA6. Communicate with supervisors and peers in a proper manner adhering to the values of respect for individual</p>
	Decision Making
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. make decisions pertaining to the concerned area of work.</p>
B. Professional Skills	Plan and Organize
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB2. plan and organize the work order and jobs</p> <p>SB3. organize all process manuals so that sorting/ accessing information is easy</p>
B. Professional Skills	Customer Centricity

MIN/N 0207

Drill Maintenance and troubleshooting

	NA
	Problem Solving
	The user/individual on the job needs to know and understand how to: SB4. detect problems in day to day tasks SB5. discuss possible solution with the supervisor for problem solving SB6. make decisions in emergency conditions
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB7. follow instructions and work on areas of improvement identified SB8. complete the assigned tasks with minimum supervision SB9. complete the job within timelines and quality norms
	Critical Thinking
The user/individual on the job needs to know and understand how to: SB10. use common sense and make judgments during day to day basis SB11. use reasoning skills to identify and resolve basic problems SB12. use intuition to detect any potential problems which could arise	

NOS Version Control

NOS Code	MIN/N 0207		
Credits(NSQF)	Level 4	Version number	0.1
Sector	Mining	Drafted on	27/01/2014
Sub-sector	Mining Operation	Last reviewed on	30/01/2014
Occupation	Drilling & Cutting	Next review date	30/01/2017

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National Occupational Standard



Overview

This unit is about reporting and documentation

Unit Code	MIN/N 0208
Unit ID (Task)	Carry out reporting and documentation
Description	This unit is about carrying out reporting and documentation
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Reporting of problem/incidents etc. • Recording and Documentation
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Reporting of problem/incidents etc.	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Report problems/incidents as applicable in a timely manner</p> <p>PC2. Report to the appropriate authority as laid down by the employer</p> <p>PC3. Follow reporting procedures as prescribed by the employer</p>
Recording and Documentation	<p>PC4. Identify documentation to be completed relating to one's role</p> <p>PC5. Record details accurately using the appropriate format</p> <p>PC6. Complete all documentation within stipulated time.</p> <p>PC7. Make sure documents are available to all appropriate authorities to inspect</p>
Knowledge and Understanding (K)	
<p>A. Organizational Context (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. Types of documentation in organization e.g. daily maintenance checklist and importance of the same</p> <p>KA2. Risk and impact of not following defined procedures/work instructions</p> <p>KA3. Rules and regulations of mine as per standard operating procedure (SOP)</p> <p>KA4. Risk and impact of not following company's SOP</p> <p>KA5. Escalation matrix for reporting identified problems</p> <p>KA6. The duties and responsibilities associated with his job role as per the employer.</p> <p>Safety guidelines specified by Directorate General of Mine Safety (DGMS)</p> <p>KA7. Different types of mines and detail of the mine he is working in</p> <p>KA8. Commonly used mining terminology - Benches (width, height etc.), haul roads (width, gradient), stability of slopes, over hang, under</p>

	<p>cut, high side etc.</p> <p>KA9. Code of traffic in specific areas of mine. Significance of fences</p> <p>KA10. Duties of workmen under Mines act</p> <p>KA11. Provision of wages, working hours and accident compensation as per Mines act</p> <p>KA12. Knowledge of mining safety procedures</p> <p>KA13. Outcome of violation of safely procedures</p> <p>KA14. Precautions to be taken when handling heavy equipment.</p>
<p>A. Core Skills/ Generic Skills</p>	<p>Writing Skills</p>
	<p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. Fill up documentation applicable to one's role</p>
	<p>Reading Skills</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SA2. Read English and/or vernacular language with few pauses and a constant speed</p> <p>SA3. Read and understand manuals, health and safety instructions, memos etc.</p> <p>SA4. Ability to read from different sources- books, screens in machines and signage</p> <p>SA5. Understand the various color codes, as per standard mining nomenclature</p>
	<p>Oral Communication (Listening and Speaking skills)</p>
<p>The user/individual on the job needs to know and understand how to:</p> <p>SA6. Express statements or information clearly so that others can hear and understand</p> <p>SA7. Participate in and understand the main points of simple discussions</p> <p>SA8. Respond appropriately to any queries</p> <p>SA9. Communicate with supervisor</p>	
<p>B. Professional Skills</p>	<p>Decision Making</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. make decisions pertaining to the concerned area of work.</p>
	<p>Plan and Organize</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB2. plan and organize the work order and jobs</p> <p>SB3. organize all process manuals so that sorting/ accessing information is easy</p>
	<p>Customer Centricity</p>
<p>NA</p>	
<p>Problem Solving</p>	
<p>The user/individual on the job needs to know and understand how to:</p> <p>SB4. detect problems in day to day tasks</p>	

	SB5. discuss possible solution with the supervisor for problem solving SB6. make decisions in emergency conditions
	Analytical Thinking
	The user/individual on the job needs to know and understand how to: SB7. follow instructions and work on areas of improvement identified SB8. complete the assigned tasks with minimum supervision SB9. complete the job within timelines and quality norms
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB10. use common sense and make judgments during day to day basis SB11. use reasoning skills to identify and resolve basic problems SB12. use intuition to detect any potential problems which could arise



NOS Code	MIN/N 0208		
Credits(NSQF)	TBD	Version number	1.0
Sector	Mining	Drafted on	28/01/2014
Sub-sector	Mining Operation	Last reviewed on	24/03/2014
Occupation	Drilling & Cutting	Next review date	24/03/2017

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National Occupational Standards



Overview

This unit is about health and safety measures critical in open-cast mines

Unit Code	MIN/N 0204
Unit Title (Task)	Health and Safety
Description	This unit is about health and safety measures critical in open-cast mines
Scope	This OS unit/task covers the following: <ul style="list-style-type: none"> Health and safety measures critical for all personnel in open-cast mines
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Health and safety measures critical for all personnel in open-cast mines.	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Comply with occupational health and safety regulations adopted by the employer.</p> <p>PC2. Follow mining operations procedures with respect to materials handling and accidents</p> <p>PC3. Follow the correct safety steps in case of fire, accident, major failure</p> <p>PC4. Work responsibly and carefully so as not to put the health and safety of self or others at risk.</p> <p>PC5. Perform storage and transport of hazardous materials compliant with safety guidelines prescribed by DGMS.</p> <p>PC6. Comply with safety regulations and procedures in case of fire hazard.</p> <p>PC7. Operate various grades of fire extinguishers.</p> <p>PC8. Work responsibly and as safe and careful as possible so as not to put the health and safety of self or others at risk, including members of the public</p> <p>PC9. Demonstrate careful practices in handling explosives and heavy machinery.</p> <p>PC10. Identify characteristics of post-blast fumes and take necessary precautions.</p>

Knowledge and Understanding (K)

A. Organizational

Context (Knowledge of the organization and its processes)

The user/individual on the job needs to know and understand:

- KA1. Benching in quarries, Dressing of overhangs, undercuts, fencing
- KA2. First aid and hygiene
- KA3. Code of practice in specific areas of mine. Significance of fences
- KA4. Standing orders in force at the mine. Safety in the vicinity of machinery
- KA5. Shot-firing and Safety regulations. How and where to take shelter
- KA6. Knowledge of mining safety procedures
- KA7. Outcome of violation of safety procedures
- KA8. Locally prepared Emergency Preparedness / Disaster Management Plan.
- KA9. Environmental impact of mining
- KA10. Sources of dust, noise and vibration and measures to minimise
- KA11. Hazardous material safety and security rules and regulations as prescribed by DGMS

NOS Version Control

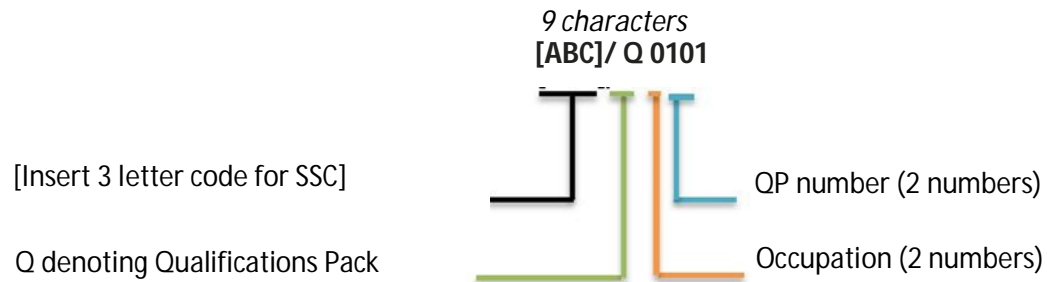
NOS Code	MIN/N 0204		
Credits(NSQF)	TBD	Version number	1.0
Sector	Mining	Drafted on	01/02/2014
Sub-sector	Mining Operation	Last reviewed on	24/03/2014
Occupation	Drilling & Cutting	Next review date	24/03/2017

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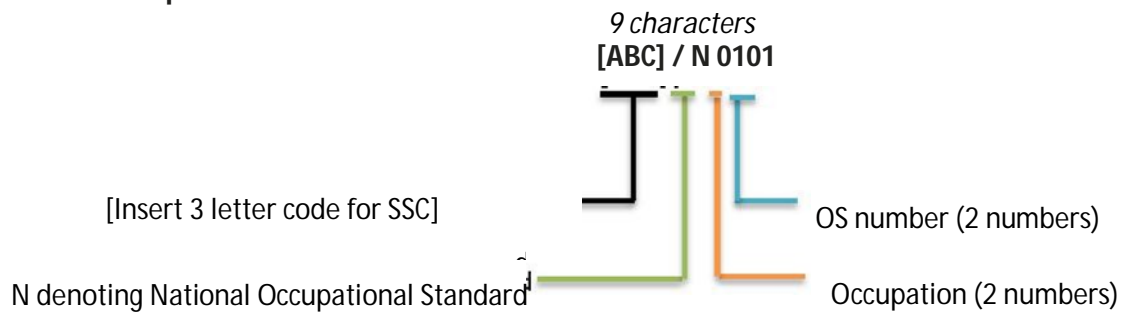
Nomenclature for QP and NOS units

Qualifications Pack



Occupational Standard

An example of NOS with 'N'



Nomenclature for QP and NOS units

The following acronyms/codes have been used in the nomenclature above:

Sub-sector	Range of Occupation numbers
Exploration & Resource Management	1 to 25
Mining Operation	26 to 65
Engineering Services	66 to 90
Mineral Beneficiation	91 to 99

Sequence	Description	Example
Three letters	Industry name	MIN
Slash	/	/
Next letter	Whether QP or NOS	N
Next two numbers	Occupation code	01
Next two numbers	OS number	01

List of Abbreviations

Term	Description
NOS	National occupation standards
QP	Qualification pack
OEM	Original equipment manufacturer
NVEQF	National vocational education qualifications framework
NSQF	National skills qualifications framework
HEMM	Heavy earth moving machinery
NCVT	National council for vocational training
DGMS	Directorate General of mines safety
PC	Performance Criteria
FIMI	Federation of Indian Mineral Industries

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role Rig Mounted Drill Operator

Qualification Pack MIN/Q 0202

Sector Skill Council Skill Council for Mining Sector

Guidelines for Assessment

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria
5. To pass the Qualification Pack, every trainee should score a minimum of 70% in every NOS
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack

Assessable Outcome	Assessment criteria	Total Mark (100)	Out Of	Marks Allocation	
				Theory	Skills Practical
1. MIN/N 0205 (Prepare Drill)	PC1. Adhere to time limits given by supervisor	20	1	1	0
	PC2. Check various controls, gauges, warning lamp and other safety devices		1	0	1
	PC3. Ensure that crown blocks are mounted securely.		1	0	1
	PC4. Check all hose connections are in order, if using a compress air drill		2	0	2
	PC5. Check that drilling equipment is in safe operating condition.		2	1	1
	PC6. Perform visual checks to detect cracks, wear and tear or any damage that could result in structural weakness		1	0	1
	PC7. Visually inspects to detect cracks or fractures in welded joints.		1	1	0
	PC8. Apply grease to all greasing pins and pivot points		2	0	2
	PC9. Check under carriage and superstructure in the drill.		1	0	1
	PC10. The drilling site is clear of other mine workers to avoid any accidents.		2	0	2



Qualifications Pack for Rig Mounted Drill Operator

	PC11. Follow the manufacturer's instructions which apply to the care and safe operation of the Drill.	2	1	1
	PC12. Keep footplates and steps clean and free from mud, dirt and oil	1	0	1
	PC13. Maintain a checking/maintenance logbook to record all activities performed before starting the Drill	2	1	1
	PC14. Inform supervisor of problems that are beyond scope of his role.	1	1	0
	Total	20	6	14
2. MIN/N 0206 (Perform Drill Operations)	PC1. Plan and organize the job according to given instructions.	30	1	0
	PC2. Organize daily consumables according to the day's plan	2	0	2
	PC3. Operate propelling motor control levers to smoothly move the drill machine in all four directions.	3	1	2
	PC4. Ensure all necessary precautions are adhered to before towing the drill to a distant site.	1	1	0
	PC5. Raise drill guide to 1.5m above ground level and make it horizontal to prevent any damage in transit.	3	0	3
	PC6. Ensure that the OEM prescribed limit for angles of inclination are followed during trimming and setting up of drills.	2	1	1
	PC7. Ensure a stable base for mounting the drill	3	1	2
	PC8. Avoid accidental fall of drill rod / hammer / bit in the drilled blast hole	2	0	2
	PC9. Adjust the tracks by methodically manipulating the positions of oscillation cylinder valve and hydraulic track valve.	1	0	1
	PC10. Follow drill depth plans and ensure quality of holes by dipping and re-drilling before leaving drill area	3	1	2
	PC11. Ensure that the highest level of quality is consistently maintained	3	1	2
	PC12. Ensure all associated products (couplings/rods etc) are used to their maximum potential, while ensuring their sustainability	2	1	1



Qualifications Pack for Rig Mounted Drill Operator



	PC13. Reduce downtime and wastage		1	0	1
	PC14. Demonstrate caution against hazards of drill machine in operation.		3	1	2
		Total	30	9	21
3. MIN/N 0207 (Perform basic maintenance and troubleshooting on Drill)	PC1. Track machine operating hours to assess the right service schedule.	20	1	1	0
	PC2. Clean air filter dust bowls		1	0	1
	PC3. Clean footplates, pedals and steps free from mud, dirt, ice and snow		1	0	1
	PC4. Drain water and sediment /fuel separators		1	0	1
	PC5. Replenish coolants, lubricants and fluids		1	0	1
	PC6. Grease all greasing pins and pivot points		1	0	1
	PC7. Check battery levels and condition of the terminals and carrying out minor adjustments if required.		1	0	1
	PC8. Check and maintain the tyre rims, air pressure, wheel nuts and treads.		1	0	1
	PC9. Check structural safety of the drill machine.		1	0	1
	PC10. Complete timely and legibly daily/weekly maintenance sheets		1	0	1
	PC11. Ensure the machine is on firm and level ground before attempting to carry out any maintenance activity.		2	1	1
	PC12. Ensure that no maintenance task on the engine is performed when running or still hot.		2	1	1
	PC13. Ensure proper Lock out and Tag out scenario to avoid any untoward incident triggered due to unknowingly operation of machine / system under maintenance		2	1	1
	PC14. Assess when the problem is beyond his competence and report the problem to suitably qualified and competent personnel		2	1	1
	PC15. Complete timely and legibly defect sheets as provided by the company		2	1	1
		Total	20	6	14
4. MIN/N 0208 (Carry Out Reporting and Logging- Drilling Operator)	PC1. Report problems/incidents as applicable in a timely manner	10	1	1	0

	PC2. Report to the appropriate authority as laid down by the employer		1	1	0
	PC3. Follow reporting procedures as prescribed by the employer		1	0	1
	PC4. Identify documentation to be completed relating to one's role		2	0	2
	PC5. Record details accurately using the appropriate format		2	0	2
	PC6. Complete all documentation within stipulated time.		2	0	2
	PC7. Make sure documents are available to all appropriate authorities to inspect		1	1	0
		Total	10	3	7
5. MIN/N 0204 (Health and Safety)	PC1. Comply with occupational health and safety regulations adopted by the employer.	30	3	1	2
	PC2. Follow mining operations procedures with respect to materials handling and accidents		4	1	3
	PC3. Follow the correct safety steps in case of fire, accident, major failure		3	1	2
	PC4. Work responsibly and carefully so as not to put the health and safety of self or others at risk.		3	0	3
	PC5. Perform storage and transport of hazardous materials compliant with safety guidelines prescribed by DGMS.		4	1	3
	PC6. Comply with safety regulations and procedures in case of fire hazard.		3	2	1
	PC7. Operate various grades of fire extinguishers.		3	1	2
	PC8. Work responsibly and as safe and careful as possible so as not to put the health and safety of self or others at risk, including members of the public		3	0	3
	PC9. Demonstrate careful practices in handling explosives and heavy machinery.		4	2	2
		Total	30	9	21