

## What are Occupational Standard (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 standard 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- Long Wall Operator

**SECTOR:** MINING

**SUB-SECTOR:** Underground Mines

**OCCUPATION:** Mining Operations

**REFERENCE ID:** MIN/ Q 0440

**ALIGNED TO:** NCO-2004/NIL

A long wall operator is responsible to cut the coal faces and mine the coal

**Brief Job Description:** This role is responsible for end to end activities associated with mining the long wall of coal in a single slice. These activities including cutting of the coal, carrying the coal by conveyors and shifting of the conveyors, support advancement and operation of electric panels for entire long wall apparatus.

**Personal Attributes:** Technical knowledge of longwall mining techniques and tools, ability to plan and prioritize, quality consciousness, sensitivity to problem solving, quick decision making, safety orientation, reading, writing and communication skills, Dexterity and high precision, ability to use internal ERP systems

|             |                                |                           |                         |                   |
|-------------|--------------------------------|---------------------------|-------------------------|-------------------|
| Job Details | <b>Qualification Pack Code</b> | <b>MIN/ Q 0440</b>        |                         |                   |
|             | <b>Job Role</b>                | <b>Long Wall Operator</b> |                         |                   |
|             | <b>Credits(NSQF)</b>           | <b>TBD</b>                | <b>Version number</b>   | <b>1.0</b>        |
|             | <b>Industry</b>                | <b>Mining</b>             | <b>Drafted on</b>       | <b>15/12/2014</b> |
|             | <b>Sub-sector</b>              | <b>Underground Mines</b>  | <b>Last reviewed on</b> | <b>24/03/2015</b> |
|             | <b>Occupation</b>              | <b>Mining Operations</b>  | <b>Next review date</b> | <b>24/03/2017</b> |

|   |  |
|---|--|
| <b>Job Role</b>   | <b>Long Wall Operator</b>  |
| <b>Role Description</b>   | This role is responsible for end to end activities associated with mining the long wall of coal in a single slice. These activities including cutting of the coal, carrying the coal by conveyors and shifting of the conveyors, support advancement and operation of electric panels for entire long wall apparatus.  |
| <b>NSQF level</b><br><b>Minimum Educational Qualification</b><br><b>Maximum Educational Qualification</b> | 4<br>Class XII<br>NA   |
| <b>Training</b><br>(Suggested but not mandatory)  | <ol style="list-style-type: none"> <li>1. Different long wall mining techniques used in organizations</li> <li>2. 5S and Safety aspects</li> <li>3. Problem Solving Techniques</li> <li>4. Quality Management Systems</li> </ol>   |
| <b>Experience</b>   | 1 year in long wall mining operations  |
| <b>Applicable National Occupational Standards</b>   | <p><b>Compulsory:</b><br/>Click on the hyperlink to read/download the required NO</p> <ol style="list-style-type: none"> <li>1. MIN/ N 0509 (<a href="#">Create the long wall mining layout</a>)</li> <li>2. MIN/ N 0510 (<a href="#">Set up the long wall mining apparatus</a>)</li> <li>3. MIN/ N 0511 (<a href="#">Conduct coal cutting operations</a>)</li> <li>4. MIN/ N 0512 (<a href="#">Shift the coal on conveyors</a>)</li> <li>5. MIN/ N 0513 (<a href="#">Advance the support and other related equipment</a>)</li> <li>6. MIN/ N 0901 (<a href="#">Health and Safety</a>)</li> </ol> <p><b>Optional:</b><br/>Not applicable</p> |
| <b>Performance Criteria</b>   | 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 standard 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 Standard 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 Standard which apply uniquely in the Indian context.   |
| Qualification Pack Code       | Qualification Pack Code is a unique reference code that identifies a qualification pack.  |
| Qualification Pack            | Qualification Pack comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A Qualification 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.         |

| Acronyms | Keywords /Terms | Description   |
|----------|-----------------|---|
|          | SCMS            | Skill council for Mining Sector                         |
|          | NOS             | National Occupational Standard                          |
|          | NSQF            | National Skill Qualification Framework                  |
|          | NVEQF           | National Vocational Educational Qualification Framework |
|          | NVQF            | National Vocational Qualification Framework             |
|          | OS              | Occupational Standard                                   |
|          | PC              | Performance Criteria                                    |
|          | QP              | Qualification Pack                                      |
|          | SSC             | Sector Skill Council                                    |

# National Occupational Standard



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## Overview

This unit is about designing and creating the layout for long wall operations

National Occupational Standard

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|--|--|
| <b>Unit Code</b>   | <b>MIN/ N 0509</b>   |
| <b>Unit Title (Task)</b>   | <b>Create the long wall mining layout</b>  |
| <b>Description</b>   | This OS unit is about designing and creating the layout for long wall operations   |
| <b>Scope</b>   | This unit/task covers the following: <ul style="list-style-type: none"> <li>Design and creation of layout for long wall mining</li> </ul>  |
| <b>Performance Criteria (PC) w.r.t. the Scope</b>  |  |
| <b>Element</b>   | <b>Performance Criteria</b>  |
| <b>Design and Create the layout for long wall mining</b>   | <p>PC1. understand the depth of coal bed beneath the land surface and its total volume in terms of ore resource</p> <p>PC2. finalize the length and breadth of the gate roads ('main gate and tail gate' in case of retreat type of mining and 'main gate' in case of advancing type of mining)</p> <p>PC3. construct the gate roads as per the thickness of coal wherein main gate is constructed at the advance of the face and tail gate is constructed by removing land above the coal height</p>  |
| <b>Knowledge and Understanding (K) w.r.t. the scope</b>  |  |
| <b>Element</b>   | <b>Knowledge and Understanding</b>   |
| <b>A. Regulatory context</b><br>(knowledge of safety guidelines specified by Director General of | <p>The user/individual on the job needs to know and understand:</p> <p>KA1. Different types of mines and detail of the mine he is working in</p> <p>KA2. Mine Organisation, time keeping, need for discipline and punctuality</p> <p>KA3. Benching in quarries, Dressing of overhangs, Undercuts, Fencing, First aid and Hygiene</p> <p>KA4. Standing orders in force at the mine. Safety in the vicinity of machinery</p> <p>KA5. Shot firing and Safety regulations. How and where to take shelter</p> <p>KA6. Duties of workmen</p> <p>KA7. Provision of wages, working hours and accident compensation as per Mines act</p> <p>KA8. Knowledge of mining safety procedures</p> <p>KA9. Impact of violation of safely procedures</p> |

|   |  |
|---|--|
| <p><b>B. Organizational Context</b><br/>(Knowledge of organization processes)</p> | <p>The user/individual on the job needs to know and understand:</p> <p>KB1. Job specific documents e.g. daily maintenance checklist and importance of the same</p> <p>KB2. Risk and impact of not following defined procedures/work instructions</p> <p>KB3. Escalation matrix for reporting identified problems</p> <p>KB4. Cost of equipment and loss for the Organization that results from damage of equipment</p> <p>KB5. All direct /indirect cost of accidents to the Organization</p> <p>KB6. Implications of delays in process to the Organization</p> <p>KB7. Locally prepared emergency response /disaster management plan.</p> |
| <p><b>C. Technical Knowledge</b></p>  | <p>The user/individual on the job needs to know and understand:</p> <p>KC1. different types of long wall mining techniques and architectural layouts to maximize the coal extraction with minimum resources</p> <p>KC2. hazards and safety aspects involved long wall mining activities and usage of relevant PPEs</p>   |

MIN/ N 0509 Create the long wall mining layout

| Skills (S) [Optional]  |  |
|--|--|
| Element  | Skills   |
| <b>Element</b><br><b>A. Core Skills/<br/>Generic Skills</b>  | <b>Writing Skills</b>  |
|  | The user/ individual on the job needs to know and understand how to:<br>SA1. note down observations (if any)<br>SA2. write information documents or enter the information in online ERP systems under guidance of the supervisor   |
|  | <b>Reading Skills</b>  |
|  | The user/individual on the job needs to know and understand how to:<br>SA3. read and interpret symbols and measurements<br>SA4. read information documents<br>SA5. understand and analyse the available data about the site  |
|  | <b>Oral Communication (Listening and Speaking skills)</b>  |
|  | The user/individual on the job needs to know and understand how to:<br>SA6. discuss task lists, schedules and activities<br>SA7. effectively communicate<br>SA8. attentively listen with full attention and comprehend the information given by various sources about the site       |
|  | <b>B. Professional Skills</b>  |
|  | <b>Plan and Organize</b>   |
|  | The user/individual on the job needs to know and understand how to:<br>SB1. plan and organize the work order and jobs<br>SB2. organize all process manuals so that sorting/ accessing information is easy  |
|  | <b>Judgment and Critical Thinking</b>  |
|  | The user/individual on the job needs to know and understand how to:<br>SB3. use common sense and make judgments during day to day basis<br>SB4. use reasoning skills to identify and resolve basic problems<br>SB5. use intuition to detect any potential problems which could arise |
| <b>Desire to learn and take initiatives</b>  |  |
| The user/individual on the job needs to know and understand how to:<br>SB6. follow instructions and work on areas of improvement identified<br>SB7. complete the assigned tasks with minimum supervision<br>SB8. complete the job within timelines and quality norms |  |
| <b>Problem Solving and Decision making</b>   |  |
| The user/individual on the job needs to know and understand how to:<br>SB9. detect problems in day to day tasks<br>SB10. discuss possible solution with the supervisor for problem solving<br>SB11. make decisions in emergency conditions                           |  |



## NOS Version Control

|                            |                   |                         |            |
|----------------------------|-------------------|-------------------------|------------|
| <b>NOS Code</b>            | MIN/ N 0509       |                         |            |
| <b>Credits(NSQF)</b>       | TBD               | <b>Version number</b>   | 1.0        |
| <b>Industry</b>            | Mining            | <b>Drafted on</b>       | 15/12/2014 |
| <b>Industry Sub-sector</b> | Underground Mines | <b>Last reviewed on</b> | 24/03/2015 |
| <b>Occupation</b>          | Mining Operations | <b>Next review date</b> | 24/03/2017 |

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# National Occupational Standard

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## Overview

This unit is about setting up the long wall apparatus including shears, supports, conveyors, trams, electrical equipment, ventilation apparatus and others

|   |  |
|---|--|
| <b>Unit Code</b>  | <b>MIN/ N0510</b>  |
| <b>Unit Title (Task)</b>  | <b>Set up the long wall mining apparatus</b>   |
| <b>Description</b>  | This OS unit is about setting up the long wall apparatus including shears, supports, conveyors, trams, electrical equipment, ventilation apparatus and others  |
| <b>Scope</b>  | This unit/task covers the following: <ul style="list-style-type: none"> <li>• Identification and setting up of the long wall mining apparatus</li> </ul>   |
| <b>Performance Criteria (PC) w.r.t. the Scope</b>   |  |
| <b>Element</b>  | <b>Performance Criteria</b>  |
| <b>Identify and set up the long wall mining apparatus</b>   | <p>PC1. Identify and understand the organizational rules and procedures</p> <p>PC2. identify the various equipment required to conduct long wall mining (both 'Advancing' and 'Retreat' type) including conveyors, shearers/ ploughs, hydraulic jacks, beam stage loader, electric panels, ventilation systems etc</p> <p>PC3. inspect and install the coal cutting apparatus (i.e. plough in case of seam under 1.8 m / 5.9 ft or shearer otherwise) basis the cutting power, carrying capacity, haulage speed, haulage pull, machine length, body height, cutting drum diameter etc to meet the coal cutting requirements</p> <p>PC4. identify the surface area, length, speed and load requirements of conveyors depending on the coal thickness and install the same</p> <p>PC5. understand the grades, thickness of the seams, stability of roofs, thickness of the sandstone plates, various geological faults etc to finalize the specifications of roof supports or hydraulic jacks/ chocks/ shields like width, bearing support, length etc to support roof of the coalface</p> <p>PC6. identify the electrical/ transmission requirements basis the long wall apparatus used and set up the same to provide power to the long wall apparatus</p> <p>PC7. install the ventilation systems/ fans to intake (fresh) air up the main gate, across the face, and then down the tail gate with return air carrying away coal dust and mine gases such as methane, carbon dioxide, depending on the geology of the coal</p> |
| <b>Knowledge and Understanding (K) w.r.t. the scope</b>   |  |
| <b>Element</b>  | <b>Knowledge and Understanding</b>   |
| <b>A. Regulatory context</b><br>(knowledge of safety guidelines specified by Director General of Mine Safety) | <p>The user/individual on the job needs to know and understand:</p> <p>KA1. Different types of mines and detail of the mine he is working in</p> <p>KA2. Mine Organisation, time keeping, need for discipline and punctuality</p> <p>KA3. Benching in quarries, Dressing of overhangs, Undercuts, Fencing, First aid and Hygiene</p> <p>KA4. Code of practice in specific areas of mine. Significance of fences</p> <p>KA5. Standing orders in force at the mine. Safety in the vicinity of machinery</p> <p>KA6. Shot firing and Safety regulations. How and where to take shelter</p> <p>KA8. Duties of workmen</p> <p>KA9. Provision of wages and working hours as per Mines act</p> <p>KA10. Knowledge of mining safety procedures</p>   |

|  |  |
|--|--|
| (DGMS))  | KA11. Impact of violation of safely procedures   |
| <b>B. Organizational Context</b><br>(Knowledge of the Organization / organization and its processes) | The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> <li>KB1. Types of documentation in organization e.g. daily maintenance checklist and importance of the same</li> <li>KB2. Risk and impact of not following defined procedures/work instructions</li> <li>KB3. Rules and regulations of mine as per standard operating procedure (SOP)</li> <li>KB4. Risk and impact of not following Organization’s SOP</li> <li>KB5. Escalation matrix for reporting identified problems</li> </ul> |
| <b>C. Technical Knowledge</b>  | The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> <li>KC1. different types of long wall mining apparatus including hydraulic jacks, shearers like single ended drum shearer, double ended drum shearer, ringing drum, plough, armoured face conveyor, cutting drums, scraper chain conveyor, beam stage loader, ventilation systems, electrical systems, etc</li> <li>KC2. hazards and safety aspects involved long wall mining activities and usage of relevant PPEs</li> </ul>       |



| Skills (S) [Optional]  |   |
|--|---|
| Element  | Skills  |
| <b>Element</b><br><b>A. Core Skills/<br/>           Generic Skills</b> | <b>Writing Skills</b><br>The user/ individual on the job needs to know and understand how to:<br>SA1. note down observations (if any)<br>SA2. write information documents or enter the information in online ERP systems under guidance of the supervisor   |
|  | <b>Reading Skills</b><br>The user/individual on the job needs to know and understand how to:<br>SA3. read and interpret symbols and measurements<br>SA4. read information documents<br>SA5. understand and analyse the available data about the site  |
|  | <b>Oral Communication (Listening and Speaking skills)</b><br>The user/individual on the job needs to know and understand how to:<br>SA6. discuss task lists, schedules and activities<br>SA7. effectively communicate<br>SA8. attentively listen with full attention and comprehend the information given by various sources about the site |
|  | <b>Plan and Organize</b><br>The user/individual on the job needs to know and understand how to:<br>SB1. plan and organize the work order and jobs<br>SB2. organize all process manuals so that sorting/ accessing information is easy   |
|  | <b>Judgment and Critical Thinking</b><br>The user/individual on the job needs to know and understand how to:<br>SB3. use common sense and make judgments during day to day basis<br>SB4. use reasoning skills to identify and resolve basic problems<br>SB5. use intuition to detect any potential problems which could arise               |
|  | <b>Desire to learn and take initiatives</b><br>The user/individual on the job needs to know and understand how to:<br>SB6. follow instructions and work on areas of improvement identified<br>SB7. complete the assigned tasks with minimum supervision<br>SB8. complete the job within timelines and quality norms                         |
| <b>B. Professional Skills</b>  | <b>Problem Solving and Decision making</b><br>The user/individual on the job needs to know and understand how to:<br>SB9. detect problems in day to day tasks<br>SB10. discuss possible solution with the supervisor for problem solving<br>SB11. make decisions in emergency conditions  |

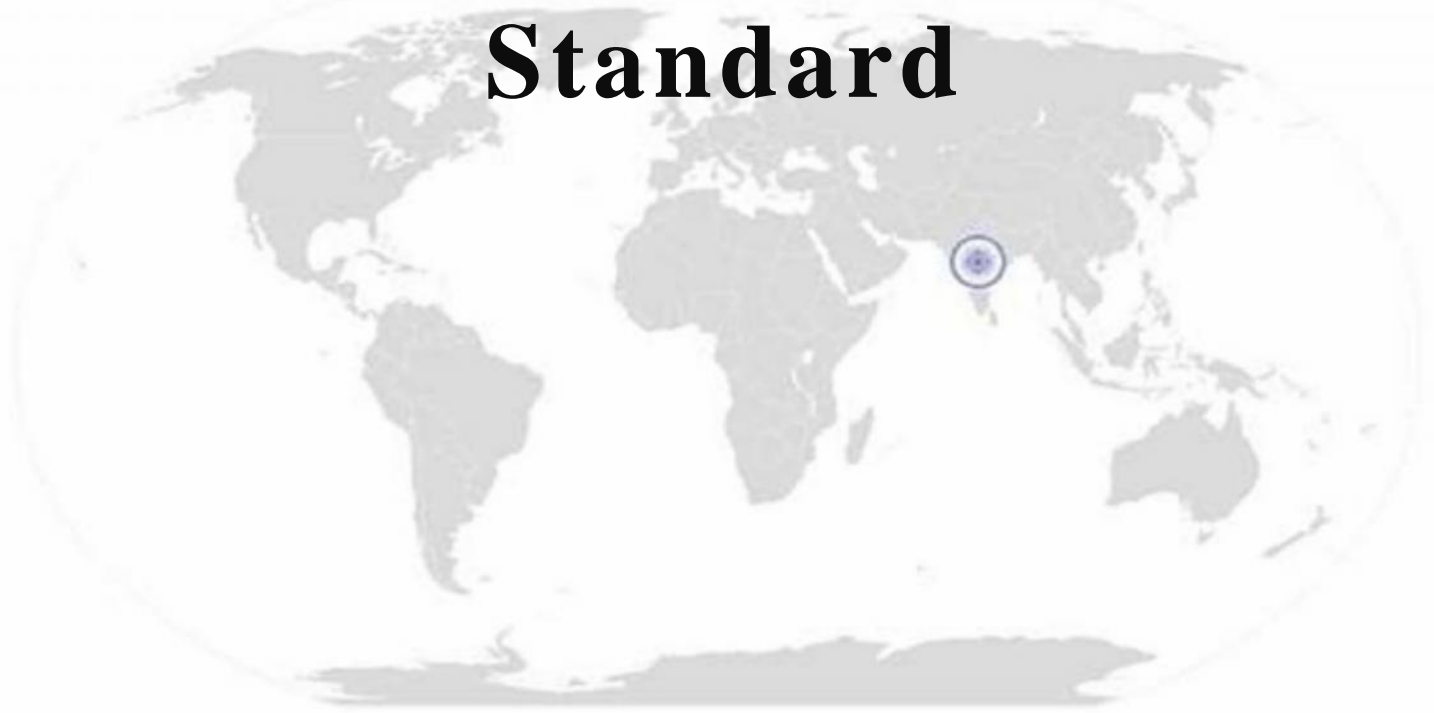
## NOS Version Control

|                            |                   |                         |            |
|----------------------------|-------------------|-------------------------|------------|
| <b>NOS Code</b>            | MIN/ N0510        |                         |            |
| <b>Credits(NSQF)</b>       | TBD               | <b>Version number</b>   | 1.0        |
| <b>Industry</b>            | Mining            | <b>Drafted on</b>       | 15/12/2014 |
| <b>Industry Sub-sector</b> | Underground Mines | <b>Last reviewed on</b> | 24/03/2015 |
| <b>Occupation</b>          | Mining Operations | <b>Next review date</b> | 24/03/2017 |

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# National Occupational Standard



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## Overview

This unit is about conducting the coal cutting operations along the face of coal with the help of shearers/ plough

National Occupational Standard

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|---|--|
| <b>Unit Code</b>                                  | MIN/ N0511   |
| <b>Unit Title (Task)</b>                          | Conduct Coal Cutting Operations  |
| <b>Description</b>                                | This OS unit is about conducting coal cutting operations along the face of coal with the help of shearers/ plough  |
| <b>Scope</b>                                      | This unit/task covers the following: <ul style="list-style-type: none"> <li>Coal cutting operations</li> </ul>   |
| <b>Performance Criteria (PC) w.r.t. the Scope</b> |  |
| <b>Element</b>                                    | <b>Performance Criteria</b>  |
| <b>Conduct coal cutting operations</b>            | <p>PC1. operate the shearer comprising the main body housing the electrical functions, the tractive motive units to move the shearer and the ranging arms with shearer cutting drums and cutting picks.</p> <p>PC2. operate the cutting drums which are used to cut the mineral from coal seam</p> <p>PC3. carry the shearer along the length of the face on the conveyor using a chain-less haulage system, wherein the shearer moves at a speed of 10–30 m/min depending on cutting conditions</p> <p>PC4. load the disintegrated the coal seam through shearing of the rotating drums onto the conveyors</p> <p>PC5. periodically inspect the shearers to analyse the picks’ sharpness, recovery rate, machine operations etc and conduct machine resetting or replacement as necessary</p> |

|  |   |
|--|---|
| <b>Knowledge and Understanding (K)</b>   |   |
| <b>A. Regulatory context</b><br>(knowledge of safety guidelines specified by Director General of Mine Safety (DGMS)) | <p>The user/individual on the job needs to know and understand:</p> <p>KA1. Different types of mines and detail of the mine he is working in</p> <p>KA2. Mine Organisation, time keeping, need for discipline and punctuality</p> <p>KA3. Benching in quarries, Dressing of overhangs, Undercuts, Fencing, First aid and Hygiene</p> <p>KA4. Code of practice in specific areas of mine. Significance of fences</p> <p>KA5. Standing orders in force at the mine. Safety in the vicinity of machinery</p> <p>KA6. Shot firing and Safety regulations. How and where to take shelter</p> <p>KA7. Duties of workmen</p> <p>KA8. Provision of wages and working hours as per Mines act</p> <p>KA9. Knowledge of mining safety procedures</p> <p>KA10. Impact of violation of safely procedures</p> |
| <b>B. Organizational Context</b><br>(Knowledge of the Organization / organization and its processes)                 | <p>The user/individual on the job needs to know and understand:</p> <p>KB1. Types of documentation in organization e.g. daily maintenance checklist and importance of the same</p> <p>KB2. Risk and impact of not following defined procedures/work instructions</p> <p>KB3. Rules and regulations of mine as per standard operating procedure (SOP)</p>  |



|                                      |  |
|--------------------------------------|--|
|                                      | <p>KB4. Risk and impact of not following Organization's SOP</p> <p>KB5. Escalation matrix for reporting identified problems</p>  |
| <p><b>C. Technical Knowledge</b></p> | <p>The user/individual on the job needs to know and understand:</p> <p>KC1. different types of long wall mining apparatus including hydraulic jacks, shearers like single ended drum shearer, double ended drum shearer, ringing drum, plough, armoured face conveyor, cutting drums, scraper chain conveyor, beam stage loader, ventilation systems, electrical systems, etc</p> <p>KC2. hazards and safety aspects involved long wall mining activities and usage of relevant PPEs</p> |





| Skills (S) [Optional]                                       |  |
|---|--|
| Element   | Skills   |
| <b>Element</b><br><b>A. Core Skills/<br/>Generic Skills</b> | <b>Writing Skills</b>  |
|   | The user/ individual on the job needs to know and understand how to:<br>SA1. note down observations (if any)<br>SA2. write information documents or enter the information in online ERP systems under guidance of the supervisor   |
|   | <b>Reading Skills</b>  |
|   | The user/individual on the job needs to know and understand how to:<br>SA3. read and interpret symbols and measurements<br>SA4. read information documents<br>SA5. understand and analyse the available data about the site  |
| <b>B. Professional Skills</b>                               | <b>Oral Communication (Listening and Speaking skills)</b>  |
|   | The user/individual on the job needs to know and understand how to:<br>SA6. discuss task lists, schedules and activities<br>SA7. effectively communicate<br>SA8. attentively listen with full attention and comprehend the information given by various sources about the site       |
|   | <b>Plan and Organize</b>   |
|   | The user/individual on the job needs to know and understand how to:<br>SB1. plan and organize the work order and jobs<br>SB2. organize all process manuals so that sorting/ accessing information is easy  |
|   | <b>Judgment and Critical Thinking</b>  |
|   | The user/individual on the job needs to know and understand how to:<br>SB3. use common sense and make judgments during day to day basis<br>SB4. use reasoning skills to identify and resolve basic problems<br>SB5. use intuition to detect any potential problems which could arise |
| <b>B. Professional Skills</b>                               | <b>Desire to learn and take initiatives</b>  |
|   | The user/individual on the job needs to know and understand how to:<br>SB6. follow instructions and work on areas of improvement identified<br>SB7. complete the assigned tasks with minimum supervision<br>SB8. complete the job within timelines and quality norms                 |
|   | <b>Problem Solving and Decision making</b>   |
|   | The user/individual on the job needs to know and understand how to:<br>SB9. detect problems in day to day tasks<br>SB10. discuss possible solution with the supervisor for problem solving<br>SB11. make decisions in emergency conditions   |



## NOS Version Control

|                            |                   |                         |            |
|----------------------------|-------------------|-------------------------|------------|
| <b>NOS Code</b>            | MIN/ N0511        |                         |            |
| <b>Credits(NSQF)</b>       | TBD               | <b>Version number</b>   | 1.0        |
| <b>Industry</b>            | Mining            | <b>Drafted on</b>       | 15/12/2014 |
| <b>Industry Sub-sector</b> | Underground Mines | <b>Last reviewed on</b> | 24/03/2015 |
| <b>Occupation</b>          | Mining Operations | <b>Next review date</b> | 24/03/2017 |

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# National Occupational Standard

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## Overview

This unit is about shifting the coal on conveyors and carry the same to the surface

MIN/ N0512 Shift the coal on conveyors

|                                |   |  |
|--------------------------------|---|--|
| National Occupational Standard | <b>Unit Code</b>  | MIN/ N0512   |
|                                | <b>Unit Title (Task)</b>  | Shift the coal on conveyors  |
|                                | <b>Description</b>  | This OS unit is about shifting the coal on conveyors and carry the same to the surface   |
|                                | <b>Scope</b>  | This unit/task covers the following: <ul style="list-style-type: none"> <li>Shifting the coal on conveyors</li> </ul>  |
|                                | <b>Performance Criteria (PC) w.r.t. the Scope</b>   |  |
|                                | <b>Element</b>  | <b>Performance Criteria</b>  |
|                                | <b>Advance the support and other related equipment</b>  | PC1. remove the coal from coal face by a scraper chain conveyor to the main gate<br>PC2. crush the coal inside a crusher at the main gate and load onto the conveyor belt by the beam stage loader (BSL) to be taken to the surface<br>PC3. identify the conveyor overload by understanding the quantity of the spilled material and adjust the machine settings accordingly<br>PC4. identify if there is any waste in the conveyor area and put the same in the waste bin   |
|                                | <b>Knowledge and Understanding (K) w.r.t. the scope</b>   |  |
|                                | <b>Element</b>  | <b>Knowledge and Understanding</b>   |
|                                | <b>A. Regulatory context</b><br>(knowledge of safety guidelines specified by Director General of Mine | The user/individual on the job needs to know and understand: <ul style="list-style-type: none"> <li>KA1. Different types of mines and detail of the mine he is working in</li> <li>KA2. Mine Organisation, time keeping, need for discipline and punctuality</li> <li>KA3. Benching in quarries, Dressing of overhangs, Undercuts, Fencing, First aid and Hygiene</li> <li>KA4. Standing orders in force at the mine. Safety in the vicinity of machinery</li> <li>KA5. Shot firing and Safety regulations. How and where to take shelter</li> <li>KA6. Duties of workmen</li> <li>KA7. Provision of wages, working hours and accident compensation as per Mines act</li> <li>KA8. Knowledge of mining safety procedures</li> <li>KA9. Impact of violation of safely procedures</li> </ul> |

MIN/ N0512 Shift the coal on conveyors


|   |   |
|---|---|
| <p><b>B. Organizational Context</b><br/>(Knowledge of organization processes)</p> | <p>The user/individual on the job needs to know and understand:</p> <p>KB1. Job specific documents e.g. daily maintenance checklist and importance of the same</p> <p>KB2. Risk and impact of not following defined procedures/work instructions</p> <p>KB3. Escalation matrix for reporting identified problems</p> <p>KB4. Cost of equipment and loss for the Organization that results from damage of equipment</p> <p>KB5. All direct /indirect cost of accidents to the Organization</p> <p>KB6. Implications of delays in process to the Organization</p> <p>KB7. Locally prepared emergency response /disaster management plan.</p>  |
| <p><b>C. Technical Knowledge</b></p>  | <p>The user/individual on the job needs to know and understand:</p> <p>KC1. different types of long wall mining apparatus including hydraulic jacks, shearers like single ended drum shearer, double ended drum shearer, ringing drum, plough, armoured face conveyor, cutting drums, scraper chain conveyor, beam stage loader, ventilation systems, electrical systems, etc</p> <p>KC2. hazards and safety aspects involved long wall mining activities and usage of relevant PPEs</p>  |
| <p><b>Skills (S) [Optional]</b></p>   |   |
| <p><b>Element</b></p>   | <p><b>Skills</b></p>  |
| <p><b>Element</b><br/><b>C. Core Skills/ Generic Skills</b></p>                   | <p><b>Writing Skills</b></p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. note down observations (if any)</p> <p>SA2. write information documents or enter the information in online ERP systems under guidance of the supervisor</p> <p><b>Reading Skills</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA3. read and interpret symbols and measurements</p> <p>SA4. read information documents</p> <p>SA5. understand and analyse the available data about the site</p> <p><b>Oral Communication (Listening and Speaking skills)</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA6. discuss task lists, schedules and activities</p> <p>SA7. effectively communicate</p> <p>SA8. attentively listen with full attention and comprehend the information given by various sources about the site</p> |
| <p><b>D. Professional Skills</b></p>  | <p><b>Plan and Organize</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. plan and organize the work order and jobs</p> <p>SB2. organize all process manuals so that sorting/ accessing information is easy</p> <p><b>Judgment and Critical Thinking</b></p>   |

MIN/ N0512 Shift the coal on conveyors

|  |  |
|--|--|
|  | <p>The user/individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none"> <li>SB3. use common sense and make judgments during day to day basis</li> <li>SB4. use reasoning skills to identify and resolve basic problems</li> <li>SB5. use intuition to detect any potential problems which could arise</li> </ul> |
|  | <p><b>Desire to learn and take initiatives</b></p>   |
|  | <p>The user/individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none"> <li>SB6. follow instructions and work on areas of improvement identified</li> <li>SB7. complete the assigned tasks with minimum supervision</li> <li>SB8. complete the job within timelines and quality norms</li> </ul>                 |
|  | <p><b>Problem Solving and Decision making</b></p>  |
|  | <p>The user/individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none"> <li>SB9. detect problems in day to day tasks</li> <li>SB10. discuss possible solution with the supervisor for problem solving</li> <li>SB11. make decisions in emergency conditions</li> </ul>   |



## NOS Version Control



|                            |                   |                         |            |
|----------------------------|-------------------|-------------------------|------------|
| <b>NOS Code</b>            | MIN/ N0512        |                         |            |
| <b>Credits(NSQF)</b>       | TBD               | <b>Version number</b>   | 1.0        |
| <b>Industry</b>            | Mining            | <b>Drafted on</b>       | 15/12/2014 |
| <b>Industry Sub-sector</b> | Underground Mines | <b>Last reviewed on</b> | 24/03/2015 |
| <b>Occupation</b>          | Mining Operations | <b>Next review date</b> | 24/03/2017 |

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# National Occupational Standard



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## Overview

This unit is about advancing the powered roof supports and other equipment in the direction of the coal length

**MIN/ N0513**  
**Advance the support and other related equipment**

|                                |  |  |
|--------------------------------|--|--|
| National Occupational Standard | <b>Unit Code</b>   | <b>MIN/ N0513</b>  |
|                                | <b>Unit Title (Task)</b>   | <b>Advance the support and other related equipment</b>   |
|                                | <b>Description</b>   | This OS unit is about advancing the powered roof supports and other equipment in the direction of the coal length  |
|                                | <b>Scope</b>   | This unit/task covers the following: <ul style="list-style-type: none"> <li>Advancing the support and other related equipment</li> </ul>   |
|                                | <b>Performance Criteria (PC) w.r.t. the Scope</b>  |  |
|                                | <b>Element</b>   | <b>Performance Criteria</b>  |
|                                | <b>Advance the support and other related equipment</b>   | <p>PC1. push the roof support forward as the shear moves along the coal length (pneumatically/ electrically) through relevant roof support systems into the newly created cavity to repeat the cutting operations</p> <p>PC2. manage the collapse of the goaf under the weight of the overlying strata</p> <p>PC3. identify the impact of goaf collapse on surface height and therefore, other related problems such as changing the course of rivers and severely damaging building foundations etc; Report the possibility of the same</p> <p>PC4. ensure the ventilation of air at the coal face periodically through ventilation systems/ fans</p> <p>PC5. Allow the built up of various gases behind seals/ Inertize the goaf area to exclude oxygen from the goaf and prevent contact of the combustible explosive gas mixture in the goaf with the oxygen and therefore, causing combustion</p> <p>PC6. monitor the seals for damage and leaks of harmful gases</p> |
|                                | <b>Knowledge and Understanding (K) w.r.t. the scope</b>  |  |
|                                | <b>Element</b>   | <b>Knowledge and Understanding</b>   |
|                                | <b>A. Regulatory context</b><br>(knowledge of safety guidelines specified by Director General of Mine) | <p>The user/individual on the job needs to know and understand:</p> <p>KA1. Different types of mines and detail of the mine he is working in</p> <p>KA2. Mine Organisation, time keeping, need for discipline and punctuality</p> <p>KA3. Benching in quarries, Dressing of overhangs, Undercuts, Fencing, First aid and Hygiene</p> <p>KA4. Standing orders in force at the mine. Safety in the vicinity of machinery</p> <p>KA5. Shot firing and Safety regulations. How and where to take shelter</p> <p>KA6. Duties of workmen</p> <p>KA7. Provision of wages, working hours and accident compensation as per Mines act</p> <p>KA8. Knowledge of mining safety procedures</p> <p>KA9. Impact of violation of safely procedures</p>   |

|   |   |
|---|---|
| <p><b>B. Organizational Context</b><br/>(Knowledge of organization processes)</p> | <p>The user/individual on the job needs to know and understand:</p> <p>KB1. Job specific documents e.g. daily maintenance checklist and importance of the same</p> <p>KB2. Risk and impact of not following defined procedures/work instructions</p> <p>KB3. Escalation matrix for reporting identified problems</p> <p>KB4. Cost of equipment and loss for the Organization that results from damage of equipment</p> <p>KB5. All direct /indirect cost of accidents to the Organization</p> <p>KB6. Implications of delays in process to the Organization</p> <p>KB7. Locally prepared emergency response /disaster management plan.</p>  |
| <p><b>C. Technical Knowledge</b></p>  | <p>The user/individual on the job needs to know and understand:</p> <p>KC1. different types of long wall mining apparatus including hydraulic jacks, shearers like single ended drum shearer, double ended drum shearer, ringing drum, plough, armoured face conveyor, cutting drums, scraper chain conveyor, beam stage loader, ventilation systems, electrical systems, etc</p> <p>KC2. hazards and safety aspects involved long wall mining activities and usage of relevant PPEs</p>  |
| <p><b>Skills (S) [Optional]</b></p>   |   |
| <p><b>Element</b></p>   | <p><b>Skills</b></p>  |
| <p><b>E. Core Skills/ Generic Skills</b></p>                                      | <p><b>Writing Skills</b></p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. note down observations (if any)</p> <p>SA2. write information documents or enter the information in online ERP systems under guidance of the supervisor</p> <p><b>Reading Skills</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA3. read and interpret symbols and measurements</p> <p>SA4. read information documents</p> <p>SA5. understand and analyse the available data about the site</p> <p><b>Oral Communication (Listening and Speaking skills)</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA6. discuss task lists, schedules and activities</p> <p>SA7. effectively communicate</p> <p>SA8. attentively listen with full attention and comprehend the information given by various sources about the site</p> |
| <p><b>F. Professional Skills</b></p>  | <p><b>Plan and Organize</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. plan and organize the work order and jobs</p> <p>SB2. organize all process manuals so that sorting/ accessing information is easy</p> <p><b>Judgment and Critical Thinking</b></p>   |



MIN/ N0513

Advance the support and other related equipment

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

- SB3. use common sense and make judgments during day to day basis
- SB4. use reasoning skills to identify and resolve basic problems
- SB5. use intuition to detect any potential problems which could arise

**Desire to learn and take initiatives**

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

- SB6. follow instructions and work on areas of improvement identified
- SB7. complete the assigned tasks with minimum supervision
- SB8. complete the job within timelines and quality norms

**Problem Solving and Decision making**

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

- SB9. detect problems in day to day tasks
- SB10. discuss possible solution with the supervisor for problem solving
- SB11. make decisions in emergency conditions





## NOS Version Control



|                            |                   |                         |            |
|----------------------------|-------------------|-------------------------|------------|
| <b>NOS Code</b>            | MIN/ N0513        |                         |            |
| <b>Credits(NSQF)</b>       | TBD               | <b>Version number</b>   | 1.0        |
| <b>Industry</b>            | Mining            | <b>Drafted on</b>       | 15/12/2014 |
| <b>Industry Sub-sector</b> | Underground Mines | <b>Last reviewed on</b> | 24/03/2015 |
| <b>Occupation</b>          | Mining Operations | <b>Next review date</b> | 24/03/2017 |

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# National Occupational Standard



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## Overview

This unit is about health and safety measures critical in mines

|  |   |
|--|---|
| <b>Unit Code</b>                           | MIN/N 0901  |
| <b>Unit Title (Task)</b>                   | Health and Safety   |
| <b>Description</b>                         | This unit is about health and safety measures critical in mines   |
| <b>Scope</b>                               | This OS unit/task covers the following: <ul style="list-style-type: none"> <li>Health and safety measures critical for personnel in mines</li> </ul>  |
| <b>Element</b>                             | <b>Performance Criteria</b>   |
| <b>Safety, Security and Administrative</b> | <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)  |  |
|--|--|
| <p><b>A. Regulatory context</b> (knowledge of safety guidelines specified by Director General of Mine Safety (DGMS))</p> | <p>The user/individual on the job needs to know and understand:</p> <ul style="list-style-type: none"> <li>KA1. Benching in quarries, Dressing of overhangs, undercuts, fencing</li> <li>KA2. First aid and hygiene</li> <li>KA3. Code of practice in specific areas of mine. Significance of fences</li> <li>KA4. Standing orders in force at the mine. Safety in the vicinity of machinery</li> <li>KA5. Shot-firing and Safety regulations. How and where to take shelter</li> <li>KA6. Knowledge of mining safety procedures</li> <li>KA7. Impact of violation of safety procedures</li> <li>KA8. Locally prepared Emergency Preparedness / Disaster Management Plan.</li> <li>KA9. Environmental impact of mining</li> <li>KA10. Sources of dust, noise and vibration and measures to minimise</li> <li>KA11. Hazardous material safety and security rules and regulations as prescribed by DGMS</li> </ul> |



## NOS Version Control

|                            |                   |                         |            |
|----------------------------|-------------------|-------------------------|------------|
| <b>NOS Code</b>            | MIN/ N0901        |                         |            |
| <b>Credits(NSQF)</b>       | TBD               | <b>Version number</b>   | 1.0        |
| <b>Industry</b>            | Mining            | <b>Drafted on</b>       | 15/12/2014 |
| <b>Industry Sub-sector</b> | Underground Mines | <b>Last reviewed on</b> | 24/03/2015 |
| <b>Occupation</b>          | Mining Operations | <b>Next review date</b> | 24/03/2017 |



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## CRITERIA FOR ASSESSMENT OF TRAINEES

**Job Role** Long Wall Operator

**Qualification Pack** MIN/ Q 0440

**Sector Skill Council** Mining

### 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 centre (as per assessment criteria below)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre 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

|  |   |                  |           | Marks Allocation |                  |
|--|---|------------------|-----------|------------------|------------------|
|  |   | Total Mark (100) | Out Of    | Theory           | Skills Practical |
| 1. MIN/ N 0509 (Create the long wall mining layout)    | PC1. understand the depth of coal bed beneath the land surface and its total volume in terms of ore resource  | <b>20</b>        | 7         | 4                | 3                |
|  | PC2. finalize the length and breadth of the gate roads ('main gate and tail gate' in case of retreat type of mining and 'main gate' in case of advancing type of mining)  |                  | 7         | 4                | 3                |
|  | PC3. construct the gate roads as per the thickness of coal wherein main gate is constructed at the advance of the face and tail gate is constructed by removing land above the coal height  |                  | 6         | 3                | 3                |
|  |   | <b>Total</b>     | <b>20</b> | <b>11</b>        | <b>9</b>         |
| 2. MIN/ N 0510 (Set up the long wall mining apparatus) | PC1. Identify and understand the organizational rules and procedures  | <b>20</b>        | 2         | 1                | 1                |
|  | PC2. identify the various equipment required to conduct long wall mining (both 'Advancing' and 'Retreat' type) including conveyors, shearers/ ploughs, hydraulic jacks, beam stage loader, electric panels, ventilation systems etc |                  | 3         | 2                | 1                |

|  |  |              |           |           |          |
|--|--|--------------|-----------|-----------|----------|
|  | PC3. inspect and install the coal cutting apparatus (i.e. plough in case of seam under 1.8 m / 5.9 ft or shearer otherwise) basis the cutting power, carrying capacity, haulage speed, haulage pull, machine length, body height, cutting drum diameter etc to meet the coal cutting requirements    |              | 3         | 2         | 1        |
|  | PC4. identify the surface area, length, speed and load requirements of conveyors depending on the coal thickness and install the same  |              | 3         | 2         | 1        |
|  | PC5. understand the grades, thickness of the seams, stability of roofs, thickness of the sandstone plates, various geological faults etc to finalize the specifications of roof supports or hydraulic jacks/ chocks/ shields like width, bearing support, length etc to support roof of the coalface |              | 3         | 2         | 1        |
|  | PC6. identify the electrical/ transmission requirements basis the long wall apparatus used and set up the same to provide power to the long wall apparatus   |              | 3         | 2         | 1        |
|  | PC7. install the ventilation systems/ fans to intake (fresh) air up the main gate, across the face, and then down the tail gate with return air carrying away coal dust and mine gases such as methane, carbon dioxide, depending on the geology of the coal   |              | 3         | 2         | 1        |
|  |  | <b>Total</b> | <b>20</b> | <b>13</b> | <b>7</b> |
| 3. MIN/ N 0511 (Conduct coal cutting operations) | PC1. operate the shearer comprising the main body housing the electrical functions, the tractive motive units to move the shearer and the ranging arms with shearer cutting drums and cutting picks.   | <b>20</b>    | 4         | 2.5       | 1.5      |
|  | PC2. operate the cutting drums which are used to cut the mineral from coal seam  |              | 4         | 2.5       | 1.5      |
|  | PC3. carry the shearer along the length of the face on the conveyor using a chain-less haulage system, wherein the shearer moves at a speed of 10–30 m/min depending on cutting conditions   |              | 4         | 2.5       | 1.5      |
|  | PC4. load the disintegrated the coal seam through shearing of the rotating drums onto the conveyors  |              | 4         | 2         | 2        |
|  | PC5. periodically inspect the shearers to analyse the picks' sharpness, recovery rate, machine operations etc and conduct machine  |              | 4         | 2.5       | 1.5      |

|  |   |              |           |            |            |
|--|---|--------------|-----------|------------|------------|
|  | resetting or replacement as necessary   |              |           |            |            |
|  |   | <b>Total</b> | <b>20</b> | <b>12</b>  | <b>8</b>   |
| 4. MIN/ N 0512 (Shift the coal on conveyors)                     | PC1. remove the coal from coal face by a scraper chain conveyor to the main gate  | <b>15</b>    | 4         | 2.5        | 1.5        |
|  | PC2. crush the coal inside a crusher at the main gate and load onto the conveyor belt by the beam stage loader (BSL) to be taken to the surface   |              | 4         | 2.5        | 1.5        |
|  | PC3. identify the conveyor overload by understanding the quantity of the spilled material and adjust the machine settings accordingly   |              | 4         | 2.5        | 1.5        |
|  | PC4. identify if there is any waste in the conveyor area and put the same in the waste bin  |              | 3         | 2          | 1          |
|  |   | <b>Total</b> | <b>15</b> | <b>9.5</b> | <b>5.5</b> |
| 5. MIN/ N 0513 (Advance the support and other related equipment) | PC1. push the roof support forward as the shear moves along the coal length (pneumatically/ electrically) through relevant roof support systems into the newly created cavity to repeat the cutting operations                            | <b>15</b>    | 2         | 1          | 1          |
|  | PC2. manage the collapse of the goaf under the weight of the overlying strata   |              | 3         | 2          | 1          |
|  | PC3. identify the impact of goaf collapse on surface height and therefore, other related problems such as changing the course of rivers and severely damaging building foundations etc; Report the possibility of the same                |              | 2         | 1          | 1          |
|  | PC4. ensure the ventilation of air at the coal face periodically through ventilation systems/ fans  |              | 2         | 1          | 1          |
|  | PC5. Allow the built up of various gases behind seals/ Infertile the goaf area to exclude oxygen from the goaf and prevent contact of the combustible explosive gas mixture in the goaf with the oxygen and therefore, causing combustion |              | 3         | 2          | 1          |
|  | PC6. monitor the seals for damage and leaks of harmful gases  |              | 3         | 2          | 1          |
|  |   | <b>Total</b> | <b>15</b> | <b>9</b>   | <b>6</b>   |
| 6. MIN/N 0901 (Health and Safety)                                | PC1. Comply with occupational health and safety regulations adopted by the employer.  | <b>10</b>    | 1         | 0.5        | 0.5        |
|  | PC2. Follow mining operations procedures with respect to materials  |              | 1         | 0.5        | 0.5        |

|  |  |           |            |            |
|--|--|-----------|------------|------------|
|  | handling and accidents.  |           |            |            |
|  | PC3. Follow the correct safety steps in case of fire, accident, and major failure.   | 1         | 0.5        | 0.5        |
|  | PC4. Work responsibly and carefully so as not to put the health and safety of self or others at risk.  | 1         | 0.5        | 0.5        |
|  | PC5. Perform storage and transport of hazardous materials compliant with safety guidelines prescribed by DGMS.   | 1         | 0.5        | 0.5        |
|  | PC6. Comply with safety regulations and procedures in case of fire hazard.   | 0.5       | 0.5        | 0          |
|  | PC7. Operate various grades of fire extinguishers.   | 1         | 0.5        | 0.5        |
|  | 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. | 1         | 0.5        | 0.5        |
|  | PC9. Demonstrate careful practices in handling explosives and heavy machinery.   | 0.5       | 0.5        | 0          |
|  | PC10. . Identify characteristics of post-blast fumes and take necessary precautions.   | 2         | 1          | 1          |
|  | <b>Total</b>   | <b>10</b> | <b>5.5</b> | <b>4.5</b> |