

QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR MINING INDUSTRY

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 standard that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

Contact Us:

FIMI House, B-311,
Okhla Ind. Area Ph-I,
New Delhi-110020
011-26814596

E-mail: scms@skillcms.in



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Introduction

Qualifications Pack- Dewatering Pump Operator

SECTOR: MINING

SUB-SECTOR: Open Cast and Underground Mines

OCCUPATION: Mechanical Maintenance

REFERENCE ID: MIN/Q 0411

ALIGNED TO: NCO-2004/8163.60

A Dewatering pump operator ensures safe operation and maintenance of power driven pumps

Brief Job Description: A dewatering pump operator operates power driven pumps for pumping, storing and supplying liquids. The operator may also repair and clean, oil and grease the pump.

Personal Attributes: This job requires the incumbent to be comfortable in performing laborious work. He should be a good listener and should be good at taking and following instructions. He should be a good team player. He should be result oriented and positive in attitude.

Job Details	Qualifications Pack Code	MIN/Q 0411		
	Job Role	Dewatering Pump Operator		
	Credits(NSQF)	TBD	Version number	1.0
	Industry	Mining	Drafted on	15/12/2014
	Sub-sector	Open Cast and Underground Mines	Last reviewed on	24/03/2015
	Occupation	Mechanical Maintenance	Next review date	24/03/2017

Job Role	Dewatering Pump Operator
Role Description	Operates power driven pumps for pumping, storing and supplying liquids. May also repairs and clean, oil and grease the pump
NSQF level	4
Minimum Educational Qualification	Class XII
Maximum Educational Qualification	NA
Training (Suggested but not mandatory)	<ol style="list-style-type: none"> 1. Various pumping techniques and equipment 2. 5S 3. Safety 4. Quality Management
Experience	6 months
Applicable National Occupational Standards	<p>Compulsory: Click on the hyperlink to read/download the required NOS</p> <ol style="list-style-type: none"> 1. MIN/ N 0435 (Pre operation check) 2. MIN / N 0436 (Operation of pumping systems) 3. MIN / N 0901 (Health and Safety) <p>Optional: Not Applicable</p>
Performance Criteria	As described in the relevant OS units

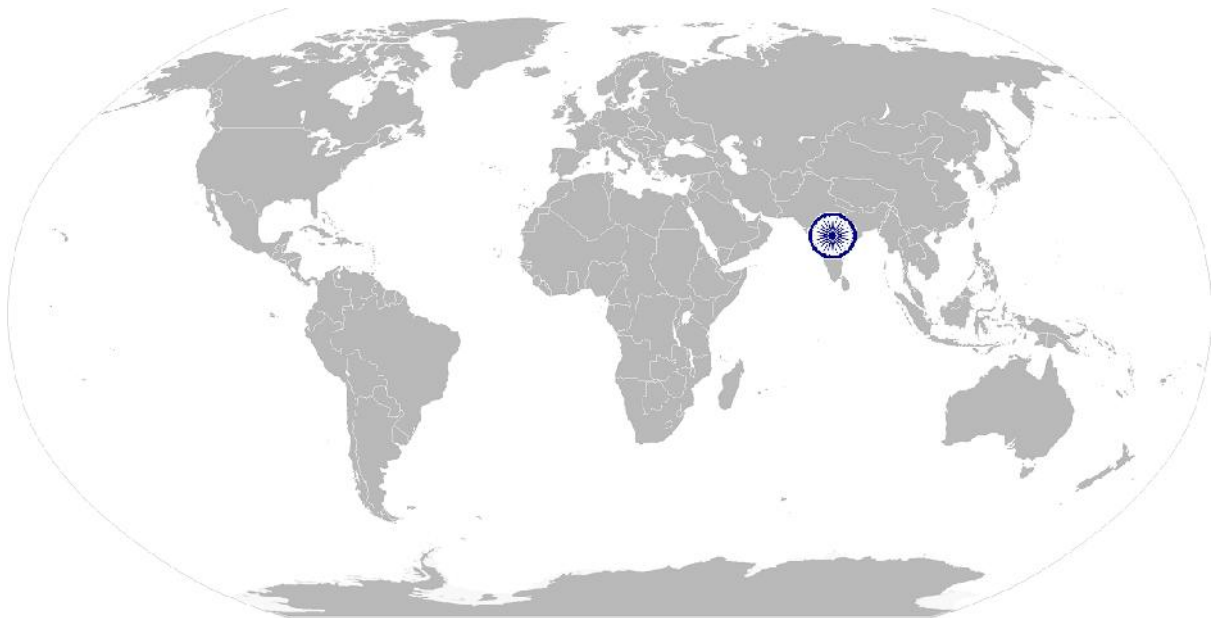
Definitions

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 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



Overview

This OS unit is about pre-operation check and condition monitoring of pumping equipment.

MIN/ N 0435 Pre Operation Check

Unit Code	MIN/ N0435
Unit Title (Task)	Pre-Operation Check
Description	This OS unit is about pre-operation check and condition monitoring of pumping equipment
Scope	This unit/task covers the following: <ul style="list-style-type: none"> Pre Operation Check
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Pre-Operation Check	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Check for cracks, defects and anomalies in the pumping apparatus</p> <p>PC2. Condition monitoring of the equipment</p> <p>PC3. Check for condition of pumping on both suction and discharge sides</p> <p>PC4. Check the condition of couplings in the equipment</p> <p>PC5. Check Electrical connections, and electrical system for proper functioning of the system</p> <p>PC6. If the pump is diesel operated, then check condition of engine and ensure that the pump drive is operating smoothly and as per required parameters. Also check, oil level, fuel level, radiator coolant and engine condition</p> <p>PC7. Check air release valve, and prime the pump if required</p>
Knowledge and Understanding (K)	
A. Regulatory context (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. Galleries in underground mine, dressing of roof, stable and unstable strata etc</p> <p>KA4. Code of traffic 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. Tramways and siding, Haulage rooms, Winding rooms, Boilers, Electrical Gears</p> <p>KA8. Duties of workmen</p> <p>KA9. Provision of wages, working hours and accident compensation as per Mines</p>

MIN/ N 0435 Pre Operation Check

	<p>act</p> <p>KA10. Knowledge of mining safety procedures</p> <p>KA11. Impact of violation of safely procedures</p> <p>KA12. Precautions to be taken when handling heavy equipment.</p>
B. Organizational Context	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. company’s policies on quality and delivery standard, safety and hazards, integrity, dress code, etc.</p> <p>KB2. risk and impact of not following defined procedures/work instructions</p> <p>KB3. how to assist in handover/ takeover of the equipment / work area as per the instructions</p>
C. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KC1. Basic fittings (valves, clamps, elbows, etc) in the pumping apparatus</p> <p>KC2. Different types of pumping apparatus (reciprocating, rotary etc.) and associated equipment and purposes</p> <p>KC3. Gauges, dials, monitoring apparatus and their purpose</p> <p>KC4. Dos and don’ts of various pumping systems as per their Standard Operating Procedures (SOPs) specified by the equipment manufacturer</p> <p>KC5. Different types of operation schedules</p> <p>KC6. Basic pumping / operation terminology</p> <p>KC7. Different types of valves and their functioning (stop valve, non-return valve etc.)</p> <p>KC8. Basic knowledge of power sources (driving systems) electrical systems & mechanical driving systems</p> <p>KC9. Basic understanding of electrical systems and operation</p> <p>KC10. The impact of various physical parameters like temperature, pressure, etc on the properties of final output</p> <p>KC11. Basic units of measurement</p> <p>KC12. Material disposal procedure</p>
Skills (S)	
A. Core Skills/ Generic Skills	<p>Writing Skills</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 logbook/ online ERP systems under guidance of the supervisor</p>
	<p>Reading Skills</p>

MIN/ N 0435 Pre Operation Check

	<p>The user/individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none"> SA3. Read and interpret symbols and measurements SA4. Read information documents SA5. Understand and analyse the available data about the site
	<p>Oral Communication (Listening and Speaking skills)</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none"> SA6. Discuss task lists, schedules and activities SA7. Effectively communicate SA8. Attentively listen with full attention and comprehend the information given by various sources about the site
B. Professional Skills	<p>Use of tools and machines</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none"> SB1. Identify tools, equipment and procedures required for installing piping fixtures and fittings SB2. Operating and maintaining tools and equipment
	<p>Plan and Organize</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none"> SB3. Plan and organize the work order and jobs SB4. Organize all process manuals so that sorting/ accessing information is easy
	<p>Judgment and Critical Thinking</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none"> SB5. Use common sense and make judgments during day to day basis SB6. Use reasoning skills to identify and resolve basic problems SB7. Use intuition to detect any potential problems which could arise
	<p>Desire to learn and take initiatives</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none"> SB8. Follow instructions and work on areas of improvement identified SB9. Complete the assigned tasks with minimum supervision SB10. Complete the job within timelines and quality norms
	<p>Problem Solving and Decision making</p>

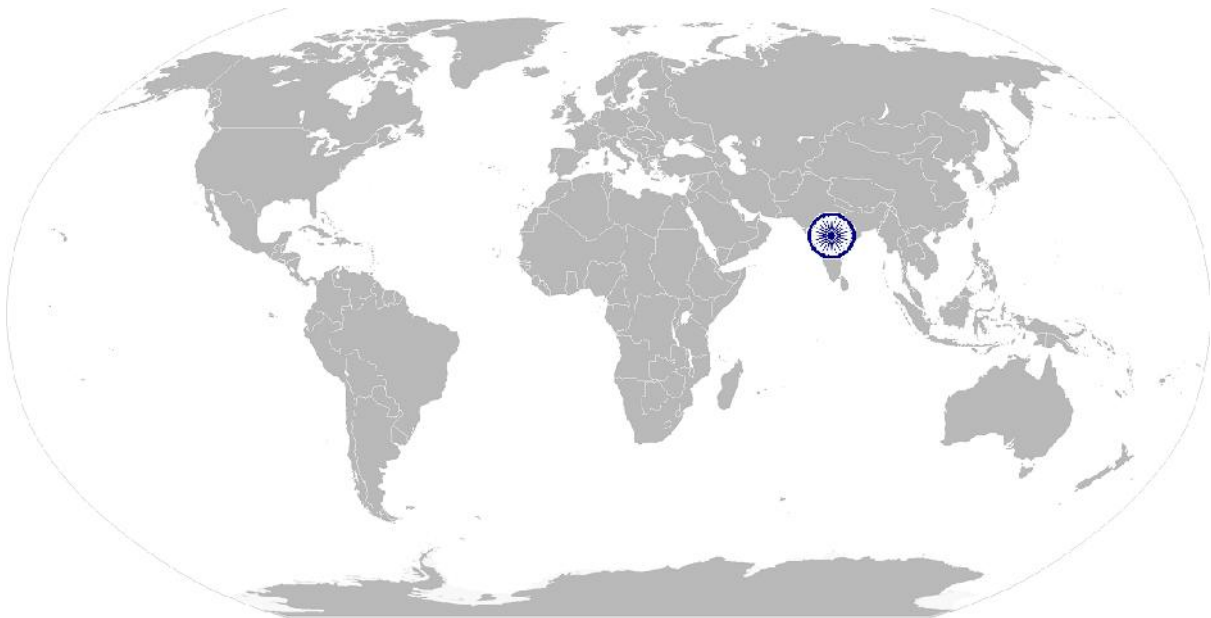
MIN/ N 0435 Pre Operation Check

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

SB11. Detect problems in day to day tasks

SB12. Discuss possible solution with the supervisor for problem solving

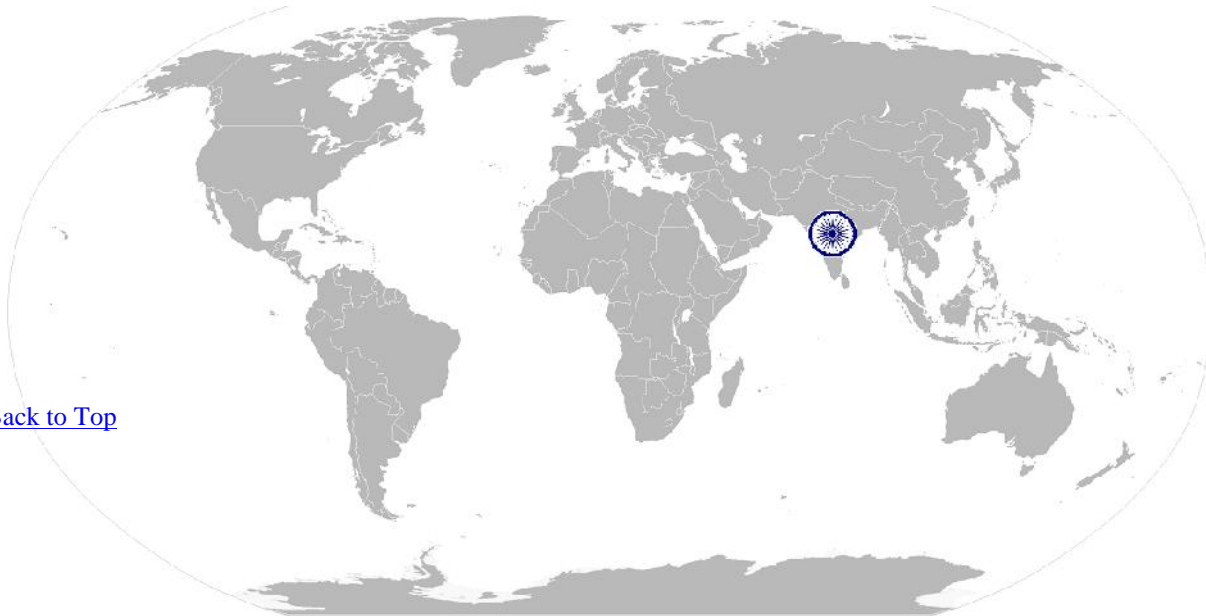
SB13. Make decisions in emergency conditions



MIN/ N 0435 Pre Operation Check

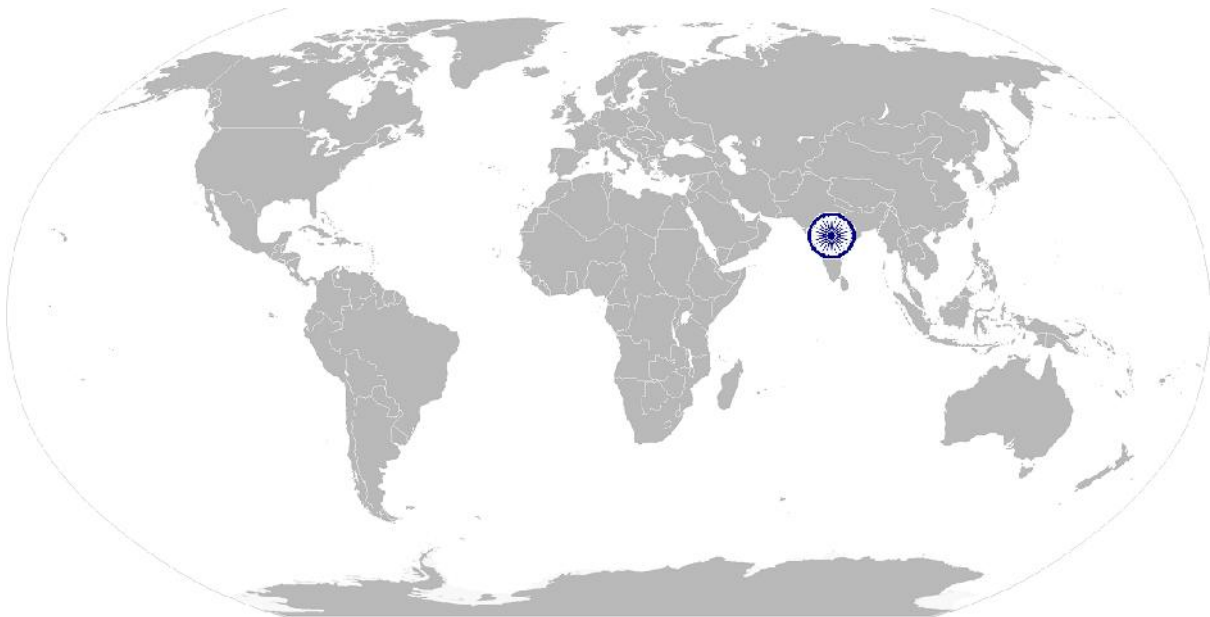
NOS Version Control

NOS Code	MIN/N 0435		
Credits(NSQF)	TBD	Version number	1.0
Sector	Mining	Drafted on	15/12/2014
Sub-sector	Open Cast and Underground Mines	Last reviewed on	24/03/2015
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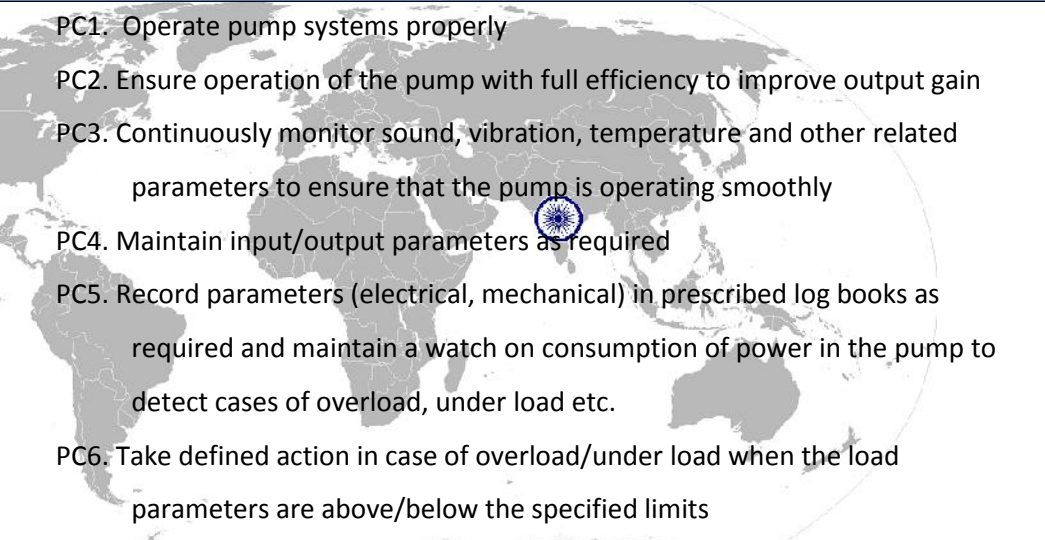


Overview

This unit is about operation of pumping systems in commercial setups.

MIN/ N 0436 Operation of Pumping Systems


National Occupational Standard

Unit Code	MIN/ N 0436
Unit Title (Task)	Operation of Pumping Systems
Description	This OS unit is about operation of pumping systems in commercial and institutional setups
Scope	<p>This unit/task covers the following:</p> <p>Operation</p> <ul style="list-style-type: none"> Operate pump Perform basic maintenance
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Operate pump	 <p>PC1. Operate pump systems properly</p> <p>PC2. Ensure operation of the pump with full efficiency to improve output gain</p> <p>PC3. Continuously monitor sound, vibration, temperature and other related parameters to ensure that the pump is operating smoothly</p> <p>PC4. Maintain input/output parameters as required</p> <p>PC5. Record parameters (electrical, mechanical) in prescribed log books as required and maintain a watch on consumption of power in the pump to detect cases of overload, under load etc.</p> <p>PC6. Take defined action in case of overload/under load when the load parameters are above/below the specified limits</p>
Perform basic maintenance	<p>PC7. Regular fuel filling in diesel pumps</p> <p>PC8. Ensure that there is no condition present which leads to overheating, and provide adequate ventilation to the system</p> <p>PC9. Take necessary steps to prevent water entry in the electrical parts of pumping apparatus</p> <p>PC10. Sound check of pumps and motors</p> <p>PC11. Conduct regular oiling of couplings and other moving components of the equipment</p>
Knowledge and Understanding (K)	

MIN/ N 0436 Operation of Pumping Systems

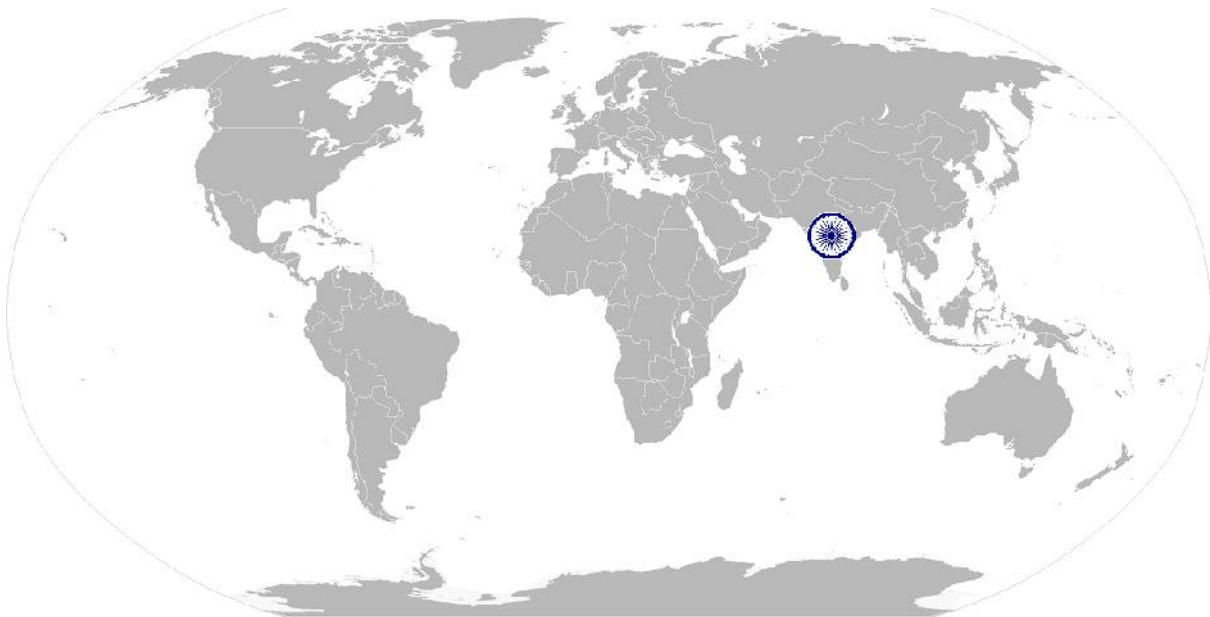
<p>A. Regulatory context (knowledge of safety guidelines specified by Director General of Mine Safety (DGMS))</p>	<p>The user/individual on the job needs to know and understand:</p> <ul style="list-style-type: none"> KA1. Different types of mines and detail of the mine he is working in KA2. Mine Organisation, time keeping, need for discipline and punctuality KA3. Galleries in underground mine, dressing of roof, stable and unstable strata etc KA4. Code of traffic in specific areas of mine. Significance of fences KA5. Standing orders in force at the mine. Safety in the vicinity of machinery KA6. Shot-firing and Safety regulations. How and where to take shelter KA7. Tramways and siding, Haulage rooms, Winding rooms, Boilers, Electrical Gears KA8. Duties of workmen KA9. Provision of wages, working hrs and accident compensation as per Mines act KA10. Knowledge of mining safety procedures KA11. Impact of violation of safely procedures KA12. Precautions to be taken when handling heavy equipment. KA13. 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>B. Organizational Context</p>	<p>The user/individual on the job needs to know and understand:</p> <ul style="list-style-type: none"> KB1. Company’s policies on: quality and delivery standard, safety and hazards, integrity, dress code, etc. KB2. Risk and impact of not following defined procedures/work instructions KB3. How to handover/ takeover of the operation duties as per the instructions
<p>C. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <ul style="list-style-type: none"> KC1. Basics of pumping systems and pumping systems monitoring devices KC2. Dos and donts of various pumping systems as per their Standard Operating Procedures (SOPs) specified by the equipment manufacturer KC3. Different types of operation schedules KC4. Basic pumping / operation terminology KC5. Units of measurement KC6. Material disposal procedure, importance of appropriate disposal of material
Skills (S) [Optional]	
A. Core Skills/	Writing Skills

MIN/ N 0436 Operation of Pumping Systems

Generic Skills	<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 logbook/ online ERP systems under guidance of the supervisor</p>
	<p>Reading Skills</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>Oral Communication (Listening and Speaking skills)</p>
B. Professional Skills	<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>Use of tools and machines</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. identify tools, equipment and procedures required for installing piping fixtures and fittings</p> <p>SB2. Operating and maintaining tools and equipment</p>
	<p>Plan and Organize</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB3. Plan and organize the work order and jobs</p> <p>SB4. Organize all process manuals so that sorting/ accessing information is easy</p>
	<p>Judgment and Critical Thinking</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB5. Use common sense and make judgments during day to day basis</p> <p>SB6. Use reasoning skills to identify and resolve basic problems</p> <p>SB7. Use intuition to detect any potential problems which could arise</p>
	<p>Desire to learn and take initiatives</p>

MIN/ N 0436 Operation of Pumping Systems

	<p>The user/individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none">SB8. Follow instructions and work on areas of improvement identifiedSB9. Complete the assigned tasks with minimum supervisionSB10. Complete the job within timelines and quality norms
	<p>Problem Solving and Decision making</p>
	<p>The user/individual on the job needs to know and understand how to:</p> <ul style="list-style-type: none">SB11. Detect problems in day to day tasksSB12. Discuss possible solution with the supervisor for problem solvingSB13. Make decisions in emergency conditions





NOS Version Control

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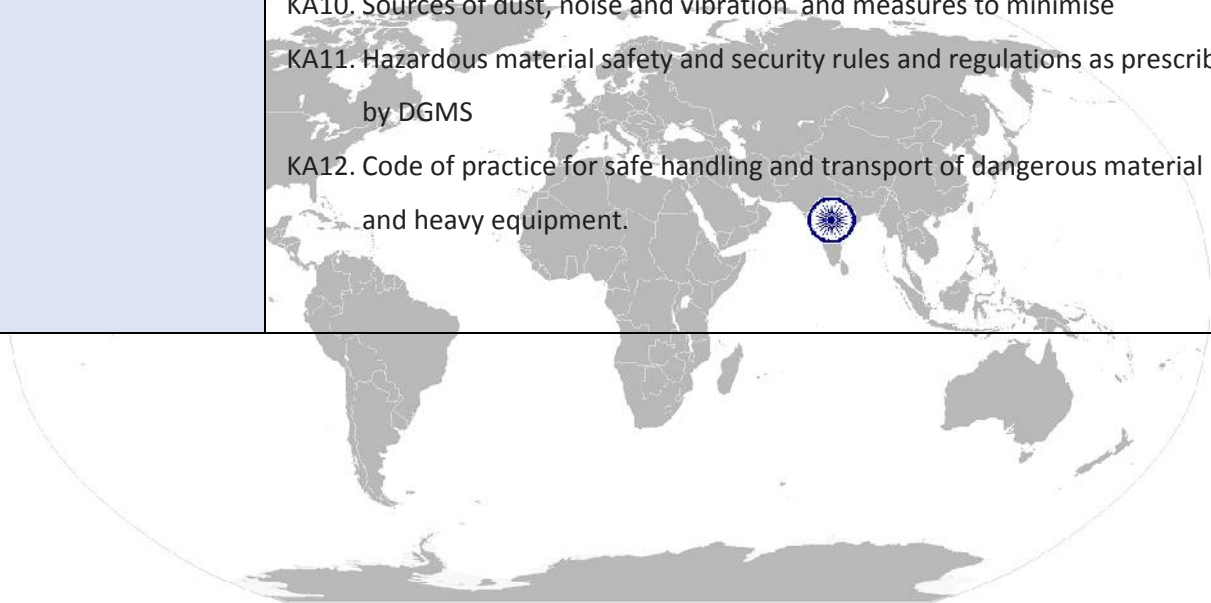


Overview

This unit is about health and safety measures critical in mines

Unit Code	MIN/N 0901
Unit Title (Task)	Health and Safety
Description	This unit is about health and safety measures critical in mines
Scope	This OS unit/task covers the following: <ul style="list-style-type: none"> Health and safety measures critical in mines
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Safety, Security and Administrative	<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 accident or major failure</p> <p>PC4. Comply with safety regulations and procedures in case of fire hazard.</p> <p>PC5. Operate various grades of fire extinguishers.</p> <p>PC6. 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>PC7. Perform storage and transport of hazardous materials compliant with safety guidelines prescribed by DGMS.</p> <p>PC8. Deal with misfires as per statutory requirement</p> <p>PC9. Identify characteristics of post-blast fumes and take necessary precautions.</p> <p>PC10. Wears safety gear such as hard hat, respiratory protection, eye protection, ear protection</p> <p>PC11. Follow the manufacturer’s instructions for care and safe operation of the equipment.</p>

Knowledge and Understanding (K)	
<p>A. Regulatory context (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"> KA1. Benching in quarries, Dressing of overhangs, undercuts, Fencing KA2. First aid and Hygiene KA3. Code of traffic 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. Impact 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 KA12. Code of practice for safe handling and transport of dangerous material and heavy equipment.



NOS Version Control

NOS Code	MIN/N 0901		
Credits(NSQF)	TBD	Version number	1.0
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Sub-sector	Underground Mines	Last reviewed on	24/03/2015
Occupation	Mining Operations	Next review date	24/03/2017



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