QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR MINING INDUSTRY

Contents

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

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Introduction

Qualifications Pack- SDL/ LHD Operator

SECTOR: MINING

SUB-SECTOR: Underground Mines

OCCUPATION: Mining Operations

REFERENCE ID: MIN/Q 0422

ALIGNED TO: NCO-2004/NIL

An SDL/ LHD operator ensures execution of end to end operation of SDL/LHD/vehicle

Brief Job Description: The SDL/ LHD operator operates the SDL/LHD/vehicle (Underground Loading Machines) safely, efficiently and effectively and carry out is upkeep and maintenance.

Note: Use of side-discharge loaders in underground mines require compliance with specific provisions of Rules, Regulations, bylaws, and orders made under the Mines Act 1952. No SDL/LHD/vehicle shall be used unless it is of a type approved by the Competent Authority and is maintained in its designed condition; and The gate end box controlling power supply to these UG machine shall be suitably interlocked with the auxiliary fan(s)/ ventilation systems in the blind headings so as to ensure that unless the auxiliary fan(s) is working the UG machine should not receive power. Operating a UG loading machinery is a specialized task that can be safely performed only with adequate training and experience.

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-work 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 0422**		
Job Role	**SDL/ LHD Operator**		
Credits(NSQF)	**TBD**	**Version number**	**1.0**
Industry	**Mining**	**Drafted on**	**15/12/2014**
Sub-sector	**Underground Mines**	**Last reviewed on**	**24/03/2015**
Occupation	**Mining Operations**	**Next review date**	**24/03/2017**

Job Role	**SDL/ LHD Operator**
Role Description	The role of SDL/ LHD operator operates the SDL/ LHD safely, efficiently and effectively and carry out is upkeep and maintenance. *SDL/ LHD is a self-propelled machine with integral front mounted bucket with a supporting structure and linkage which loads or excavates through forward motion of the machine, and lifts, transports and discharges material.*
NSQF level **Minimum Educational Qualification** **Maximum Educational Qualification**	4 Class XII Not Applicable
Training (Suggested but not mandatory)	1. Technical and gallery training as per first schedule, Mining Vocational Training Rules (MVTR) 1966. 2. Refresher training if absent from mines for a period of one year or more before re-employment. 3. Heavy Commercial Vehicle Driving License
Experience	1-10 years
Applicable National Occupational Standards	**Compulsory:** **Click on the hyperlink to read/download the required NOS** 1. MIN/ N0461 (Prepare SDL/ LHD) 2. MIN/ N0462 (Perform SDL/ LHD Operations) 3. MIN/ N0463 (Perform basic maintenance and troubleshooting on SDL/ LHD) 4. MIN/ N0901 (Health and Safety) **Optional** Not Applicable
Performance Criteria	As described in the relevant OS units

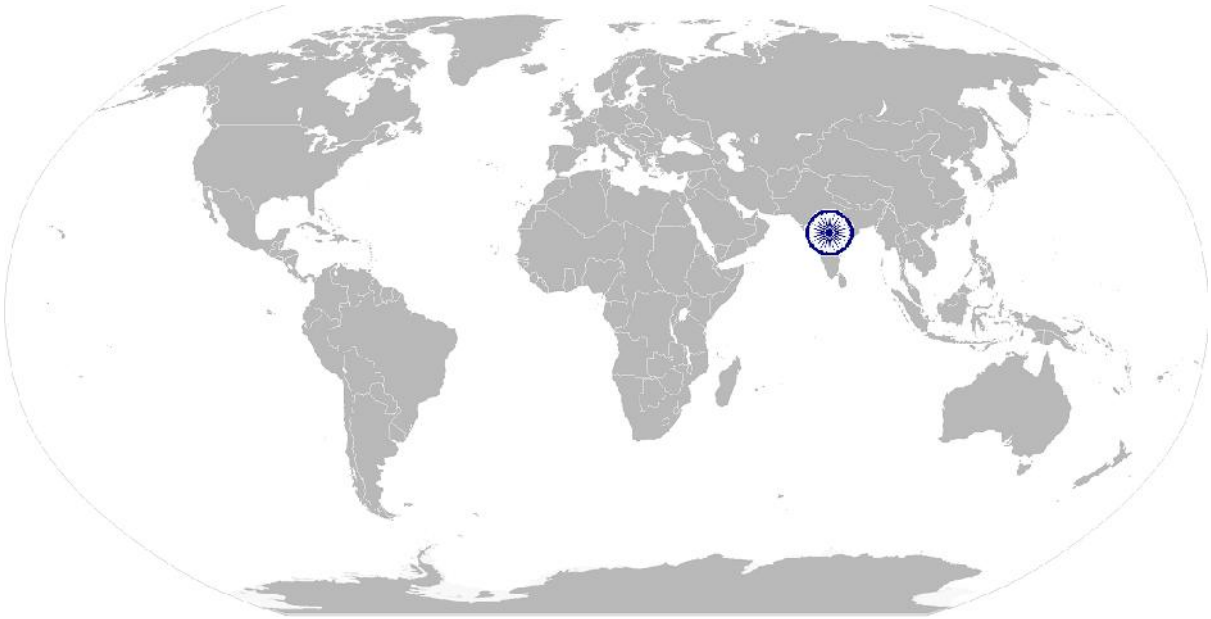
Definitions

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 unit is about preparing the SDL/ LHD for activities that need to be carried out during a shift.

MIN/N 0461 Prepare SDL/LHD/ Other Loading Machine for operations

National Occupational Standard

Unit Code	MIN/N 0461
Unit Title (Task)	Prepare SDL/LHD/ Other Loading Machine for operations
Description	This unit is about preparing the SDL/LHD/ Other Loading Machine for activities that need to be carried out during a shift
Scope	This OS unit/task covers the following: • Conducting pre-operation checks to ensure the SDL/ LHD is safe to use • Recording details of checking and maintenance

Performance Criteria(PC) w.r.t. the Scope	
Element	**Performance Criteria**
Pre-operation checks	To be competent, the user/individual on the job must be able to: PC1. Check oil and fluid levels in hydraulic tank, transfer gear boxes, crawler drive/ wheel drive units PC2. Check air/ fuel filter condition PC3. Refill the grease nipples PC4. Check that all power sources are used and maintained in a proper working order (earth continuity and interlocking) PC5. Check that the gate end box controlling power supply to the machine is suitably interlocked with the auxiliary fan ventilating the blind heading to ensure that unless auxiliary fan is working the machine should not receive power PC6. Check for all the safety features in proper working order – Audio Visual Alarm, headlight, control instrument panel, pressure gauge etc. PC7. Check condition of main brake, parking brake and brake release pump PC8. Check for proper functioning of power transmission unit and transmission shift controls PC9. Check to ensure that machine working area is clear of all obstructions PC10. Check proper tension of all crawler chain and working condition of wheel drive units/ propelling units PC11. Check the oil cooler radiator and clean the fins PC12. Check the physical condition of trailing cables, hose fittings and reeling/ unreeling features during each shift

MIN/N 0461 Prepare SDL/LHD/ Other Loading Machine for operations

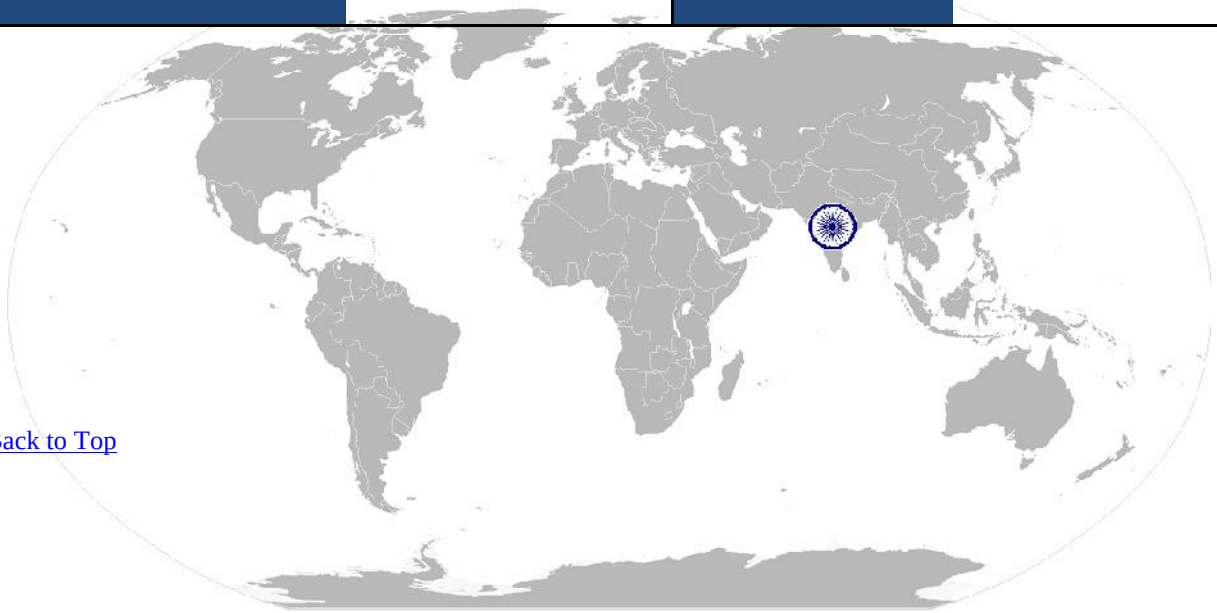
	PC13. Before beginning with the task, clearly understand the dimensions and load carrying capacity of the machine, the work area, weight of the machine as well as the heavy load to ensure safety while in operation PC14. Perform no-load test before beginning of the shift to check • Operation of the running portion of the loader including control handles, levers and buttons • Force on control handles and pedals • Working of drive and other assemblies of machine • Working of retracting part and conveyor PC15. Perform cleaning of the machine and ensure that it is free of dust, grease, loose stones etc. for proper upkeep and functioning of the machine
Recording details	PC16. Maintain a checking/maintenance logbook to record all activities performed before starting the SDL/LHD as the case may be PC17. At the end of the shift, discuss about the condition of the machine while handing over to next shift operator and note the same in the record book PC18. Inform supervisor of problems that are beyond scope of his role.
Knowledge and Understanding (K)	
A. **Regulatory context (knowledge of safety guidelines specified by Director General of Mine Safety (DGMS))**	The user/individual on the job needs to know and understand: 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. 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. Duties of workmen KA7. Provision of wages, working hours and accident compensation as per Mines act KA8. Knowledge of mining safety procedures KA9. Impact of violation of safely procedures
A. Organizational Context (Knowledge of the company /	The user/individual on the job needs to know and understand: KB1. Job specific documents e.g. daily maintenance checklist and importance of the same KB2. Risk and impact of not following defined procedures/work instructions

organization and its processes)	KB3. Escalation matrix for reporting identified problems KB4. Cost of equipment and loss for the Organization that results from damage of equipment KB5. All direct /indirect cost of accidents to the Organization KB6. Implications of delays in process to the Organization KB7. Locally prepared emergency response /disaster management plan.
C. Technical / Domain Knowledge	The user/individual on the job needs to know and understand: KC1. Different types of loaders and their specific uses (e.g. Front or side tipping loader including load haul dump loader etc.) KC2. Basic principle of operation of underground mining loader KC3. Basics of engine, its components and functioning KC4. Type and make of the machine, power sources (electric, pneumatic, diesel engine etc.), and travel mode (crawler, tyre, rail mounted etc.) and manufacturer specific layout and mechanisms KC5. Capacity of machine e.g. bucket hoisting capacity, lifting hydraulic pump capacity, crawling speed etc. KC6. Working inclination and gradeability of the machine KC7. Knowledge and functioning of all the control levers and other devices for operation of the machine KC8. Conversant with all the electrical/mechanical controls of operations and features of safety equipment incorporated in the machine along with the safe working environment prescribed in the statute KC9. Knowledge and working of electrical circuits e.g. battery and dynamo connections KC10. Knowledge the hydraulic circuits for travelling and loading operations KC11. Common troubles and trouble-shooting techniques KC12. Signage, mining area signs and other safety and emergency signals KC13. Response to emergencies such as fire, accident, major failure etc.
Skills (S)	
Element **A. Core Skills/ Generic Skills**	**Writing Skills** The user/ individual on the job needs to know and understand how to: SA1. Note down observations (if any)

	SA2. Write information documents or enter the information in online ERP systems under guidance of the supervisor
	Reading Skills
	The user/individual on the job needs to know and understand how to: SA3. Read and interpret symbols and measurements SA4. Read information documents SA5. Understand and analyse the available data about the site
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: 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	**Plan and Organize**
	The user/individual on the job needs to know and understand how to: SB1. Plan and organize the work order and jobs SB2. Organize all process manuals so that sorting/ accessing information is easy
	Judgment and Critical Thinking
	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

NOS Code	**MIN/N 0461**		
Credits(NSQF)	**TBD**	**Version number**	**1.0**
Sector	**Mining**	**Drafted on**	**15/12/2014**
Sub-sector	**Underground mines**	**Last reviewed on**	**24/03/2015**
Occupation	**Mining Operations**	**Next review date**	**24/03/2017**



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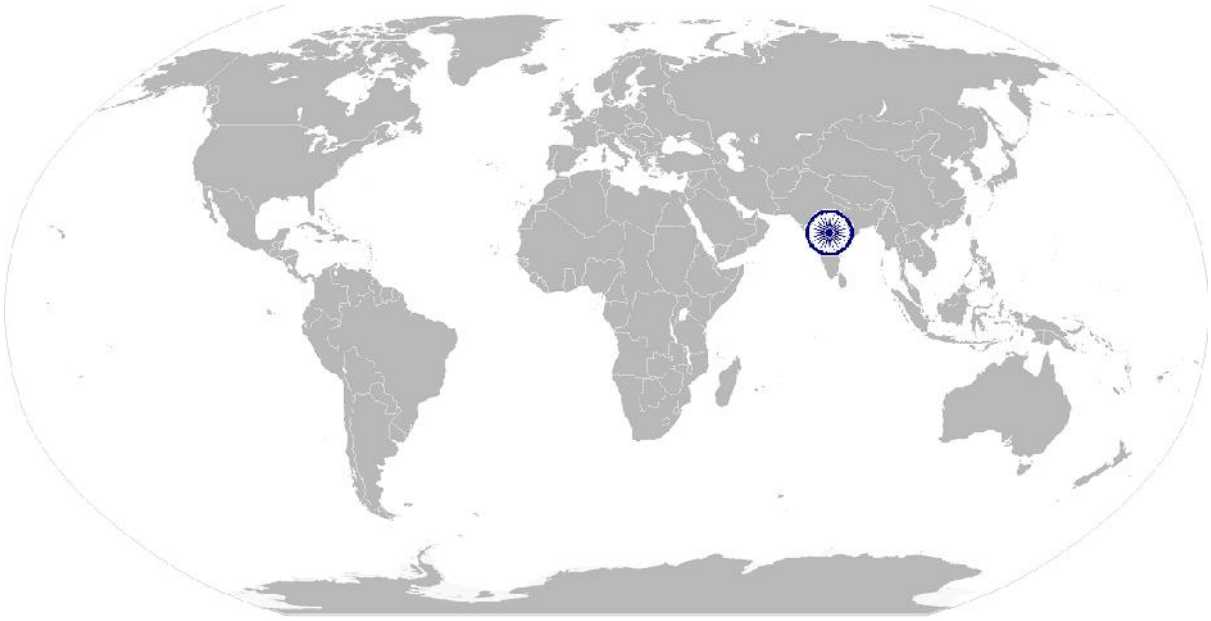


Overview

This unit is about performing the SDL/ LHD operations for activities that need to be carried out during a shift

MIN/ N 0462 Perform SDL/ LHD Operations

National Occupational Standard

Unit Code	MIN/ N0462
Unit Title (Task)	**Perform SDL/ LHD Operations**
Description	This unit is about performing SDL/ LHD operation
Scope	This OS unit/task covers the following: • Starting/ stopping and driving the machine to work area • SDL/LHD operation
Performance Criteria (PC) w.r.t. the Scope	
Element	**Performance Criteria**
Starting/ stopping and driving the machine to work area	To be competent, the user/individual on the job must be able to: PC1. Keep the headlights of the machine continuously 'ON' position during the operation of the machine PC2. Alert all personnel in the vicinity through pre- start audible warning , before starting the machine give sufficient time to move away to a safe place PC3. Use various audio-visual warning devices available in the machine such as hazard light, horn etc. to alert personnel during all times PC4. Monitor operation continuously so that, no one is present in front and behind the machine frame where he is not likely to be visible to the operator PC5. Lower the loading bucket and keep on ground when it is not in operation PC6. Isolate the machine using the provided mechanism(s) when the machine is not working PC7. Ensure that the machine is stationary and secured, when the machine is left standing on gradient PC8. Ensure that the machine is brought to rest and power is cut off before undertaking any repair, servicing or adjustment. Before carrying out any maintenance work on the bucket in raised position, it shall be secured with suitable support or device
SDL / LHD operation	PC9. Assess the work site for operating dimensions of the machine (bucket lift height, tilt angle, turning radius etc.) and specific hazards to ensure safe and efficient operation PC10. Operate machine using the operating guidelines specified by the

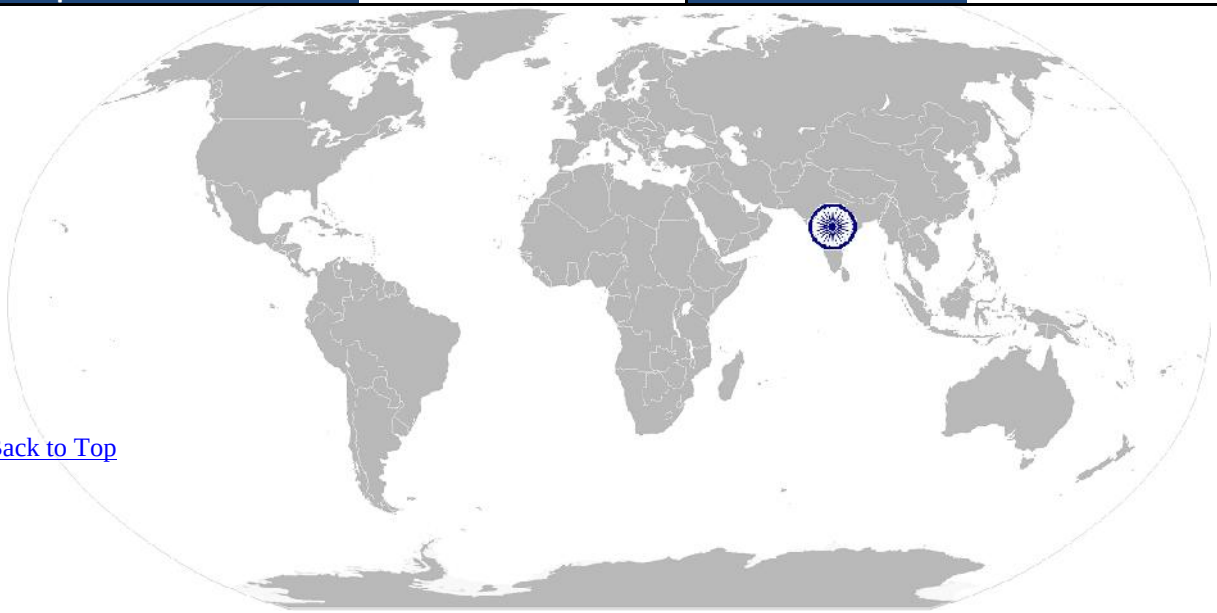
	manufacturer PC11. Stabilize the machine using brakes, chokes, anchorage and provisions provided before starting machine while working on an incline PC12. Effectively manoeuvre the joystick levers provided for loading and side tipping operations (if required) PC13. Ensure optimum distance from loading to dumping point to maximize yield PC14. Discharge the load safely at the position and in the manner designated by the supervisor PC15. Monitor that the ore is not overloaded on dump truck PC16. Deploy appropriate brake in different type of situation PC17. Ensure that the immediate work area is clear of personnel at all times of operation PC18. Inform supervisor of any problems while operating the machine
Knowledge and Understanding (K)	
A. **Regulatory context (knowledge of safety guidelines specified by Director General of Mine Safety (DGMS))**	The user/individual on the job needs to know and understand: 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. 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. Duties of workmen KA7. Provision of wages, working hours and accident compensation as per Mines act KA8. Knowledge of mining safety procedures KA9. Impact of violation of safely procedures
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KB1. Types of documentation in organization e.g. daily maintenance checklist and importance of the same KB2. Risk and impact of not following defined procedures/work instructions KB3. Rules and regulations of mine as per standard operating procedure (SOP) KB4. Risk and impact of not following Organization's SOP KB4. Escalation matrix for reporting identified problems

	KB5. The duties and responsibilities associated with his job role as per the employer KB6. Cost of delays to the Organization KB7. Direct /Indirect cost of accidents to the Organization KB8. Locally prepared emergency response /disaster management plan.
C. Technical/ Domain Knowledge	KC1. Different types of loaders and their specific uses (e.g. Front or side tipping loader including load haul dump loader etc.) KC2. Basic principle of operation of underground mining loader KC3. Basics of engine, its components and functioning KC4. Type and make of the machine, power sources (electric, pneumatic, diesel engine etc.), and travel mode (crawler, tyre, rail mounted etc.) and manufacturer specific layout and mechanisms KC5. Capacity of machine e.g. bucket hoisting capacity, lifting hydraulic pump capacity, crawling speed etc. KC6. Working inclination and gradeability of the machine KC7. Knowledge and functioning of all the control levers and other devices for operation of the machine KC8. Safe reading range of meters and gauges e.g. fuel gauge, engine oil pressure and temperature KC9. Electrical/mechanical controls of operations and features of safety equipment incorporated in the machine along with the safe working environment prescribed in the statute KC10. Knowledge and working of electrical circuits e.g. battery and dynamo connections KC11. Knowledge the hydraulic circuits for travelling and loading operations KC12. Common troubles and trouble-shooting techniques KC13. Signage, mining area signs and other safety and emergency signal KC14. Response to emergencies such as fire, accident, major failure etc.
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	**Writing Skills**
	The user/ individual on the job needs to know and understand how to: SA1. Note down observations (if any)

	SA2. Write information documents or enter the information in online ERP systems under guidance of the supervisor
	Reading Skills
	The user/individual on the job needs to know and understand how to: SA3. Read and interpret symbols and measurements SA4. Read information documents SA5. Understand and analyse the available data about the site
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: 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	**Plan and Organize**
	The user/individual on the job needs to know and understand how to: SB1. Plan and organize the work order and jobs SB2. Organize all process manuals so that sorting/ accessing information is easy
	Judgment and Critical Thinking
	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

NOS Code	MIN/N 0462		
Credits(NSQF)	TBD	Version number	1.0
Sector	Mining	Drafted on	15/12/2014
Sub-sector	Underground mines	Last reviewed on	24/03/2015
Occupation	Mining Operations	Next review date	24/03/2017



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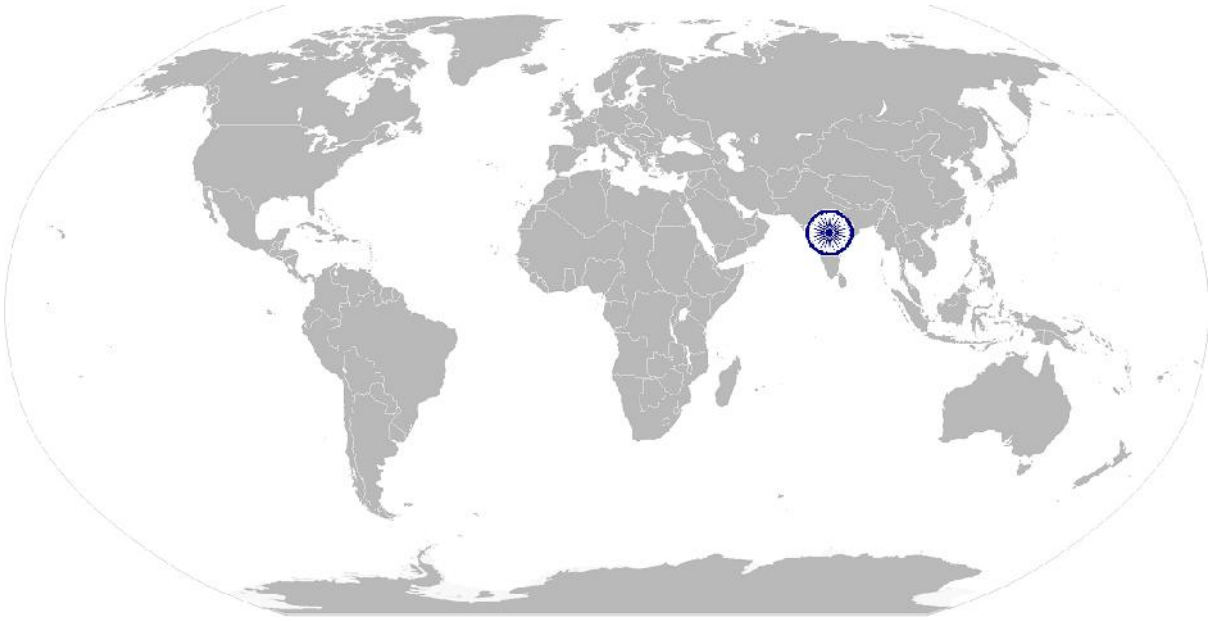

Overview

This unit is about maintenance of the SDL/ LHD Machine.

MIN/ N 0463 Perform routine maintenance and troubleshooting on the SDL/LHD

National Occupational Standard

Unit Code	MIN/ N0463
Unit Title (Task)	**Perform routine maintenance and troubleshooting on the SDL/LHD**
Description	This unit is about performing routine maintenance and troubleshooting tasks on the SDL/ LHD
Scope	This OS unit/task covers the following: • Preventive maintenance • Basic diagnostics and Troubleshooting

Performance Criteria (PC) w.r.t. the Scope	
Element	**Performance Criteria**
Preventive maintenance	To be a competent SDL/ LHD operator, the individual on the job must also be able to: PC1. Note machine operating hours in the log book provided to track and assess the right service schedule PC2. Monitor the specified levels of coolants, lubricants, engine oil, transmission oil etc. and replenish if required PC3. Grease all the grease nipples and pivot pins as required PC4. Check battery levels and condition of the terminals and carrying out minor adjustments if required PC5. Check the oil cooler radiator and clean the fins, top off coolant if required PC6. Check the physical condition of trailing cables, hose fittings and reeling/ unreeling features PC7. Check the condition of crawler chain and observe any looseness, cracks etc. PC8. Check and maintain the tyre rims, air pressure, wheel nuts and treads.
Basic diagnostics and Troubleshooting	PC9. Ensure that the machine is brought to rest and power is cut off before undertaking any repair, servicing or adjustment. Before carrying out any maintenance work on the bucket in raised position, it shall be secured with suitable support or device PC10. Ensure that no maintenance task on the engine is performed when running or still hot. PC11. Check the instrument panel and control gauge to identify out-of range readings to find the defect / cause of failure

	PC12. Ensure proper Lock out and Tag out scenario to avoid any untoward incident triggered due to unknowingly carried out operation of machine / system under maintenance PC13. Assess when the problem is beyond his competence and report the problem to suitably qualified and competent personnel PC14. Complete timely and legibly defect sheets as provided by the Organization
Knowledge and Understanding (K)	
A. Regulatory context (knowledge of safety guidelines specified by Director General of Mine Safety (DGMS))	The user/individual on the job needs to know and understand: 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 practice 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. Duties of workmen KA8. Provision of wages and working hours as per Mines act KA9. Knowledge of mining safety procedures KA10. Impact of violation of safely procedures
B. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KB1. Types of documentation in organization e.g. daily maintenance checklist and importance of the same KB2. Risk and impact of not following defined procedures/work instructions KB3. Rules and regulations of mine as per standard operating procedure (SOP) and relevant statues KB4. Risk and impact of not following Organization's SOP KB5. Escalation matrix for reporting identified problems
C. Technical/ Domain Knowledge	KC1. Different types of loaders and their specific uses (e.g. Front or side tipping loader including load haul dump loader etc.) KC2. Basic principle of operation of underground mining loader KC3. Basics of engine, its components and functioning

	KC4. Basics of gear, gear box and power transmission unit KC5. Basics of steering systems KC6. Knowledge of checklist for visual inspection of machine KC7. Knowledge of parts of machine that require routine lubrication and type of lubricant to be used KC8. Basics understanding of braking system and its hydraulic /pneumatic circuit in the machine KC9. Instrument panel and indicators provided for diagnostics of common problem (e.g. engine temperature, brake engagement, torque, rpm etc.) KC10. Type and make of the machine, power sources (electric, pneumatic, diesel engine etc.), and travel mode (crawler, tyre, rail mounted etc.) and manufacturer specific layout and mechanisms KC11. Capacity of machine e.g. bucket hoisting capacity, lifting hydraulic pump capacity, crawling speed etc. KC12. Knowledge and functioning of all the control levers and other devices for operation of the machine KC13. Safe reading range of meters and gauges e.g. fuel gauge, engine oil pressure and temperature KC14. Conversant with all the electrical/mechanical controls of operations and features of safety equipment incorporated in the machine along with the safe working environment prescribed in the statute KC15. Knowledge and working of electrical circuits e.g. battery and dynamo connections KC16. Knowledge the hydraulic circuits for travelling and loading operations KC17. Common troubles and trouble-shooting techniques KC18. Signage, mining area signs and other safety and emergency signs KC19. Response to emergencies such as fire, accident, major failure etc.
Skills (S) [Optional]	
C. Core Skills/ Generic Skills	**Writing Skills**
	The user/ individual on the job needs to know and understand how to: SA1. Note down observations (if any)

	SA2. Write information documents or enter the information in online ERP systems under guidance of the supervisor
	Reading Skills
	The user/individual on the job needs to know and understand how to: SA3. Read and interpret symbols and measurements SA4. Read information documents SA5. Understand and analyse the available data about the site
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: 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
D. Professional Skills	**Plan and Organize**
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	Problem Solving and Decision making
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NOS Version Control

NOS Code	MIN/N 0463		
Credits(NSQF)	TBD	Version number	1.0
Sector	Mining	Drafted on	15/12/2014
Sub-sector	Underground mines	Last reviewed on	24/03/2015
Occupation	Mining Operations	Next review date	24/03/2017

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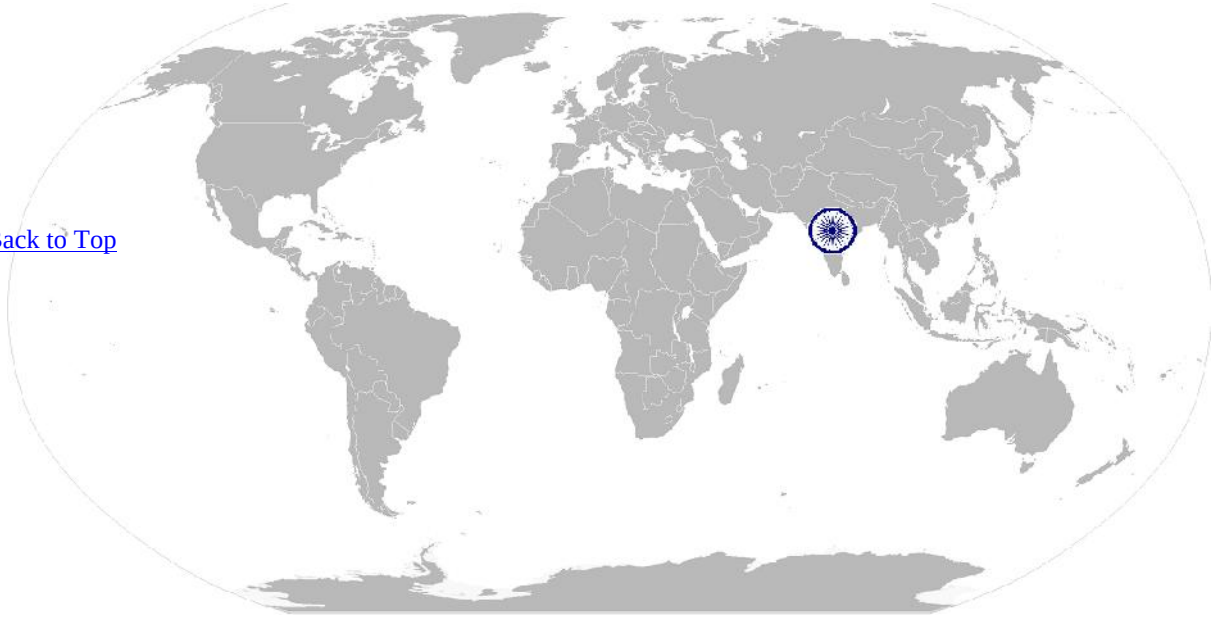
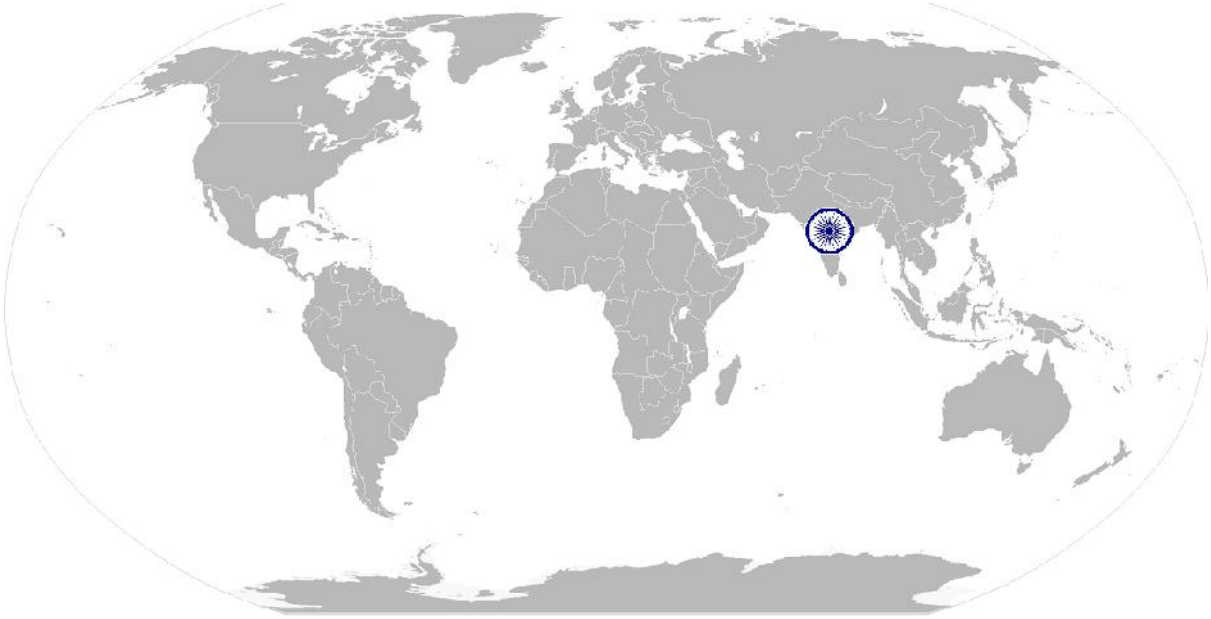


National Occupational Standard



Overview

This unit is about health and safety measures critical in mines

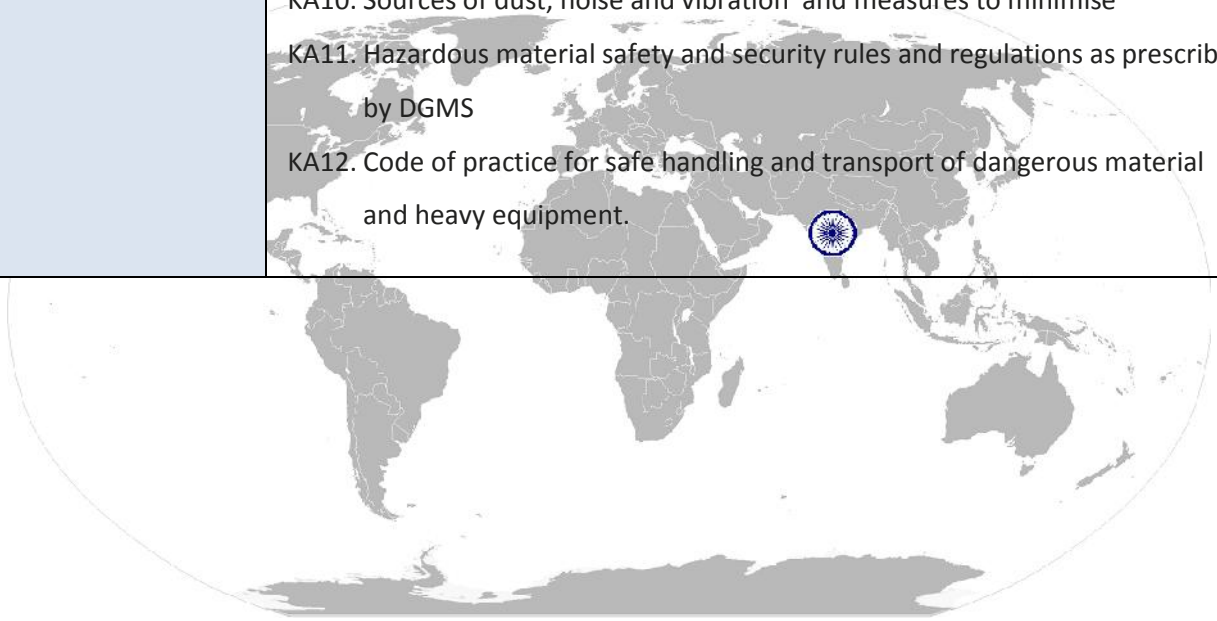
MIN/ N 0901 Health and Safety

National Occupational Standard

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: • Health and safety measures critical in mines
Performance Criteria (PC) w.r.t. the Scope	
Element	**Performance Criteria**
Safety, Security and Administrative	To be competent, the user/individual on the job must be able to: PC1. Comply with occupational health and safety regulations adopted by the employer. PC2. Follow mining operations procedures with respect to materials handling and accidents PC3. Follow the correct safety steps in case of accident or major failure PC4. Comply with safety regulations and procedures in case of fire hazard. PC5. Operate various grades of fire extinguishers. 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 PC7. Perform storage and transport of hazardous materials compliant with safety guidelines prescribed by DGMS. PC8. Deal with misfires as per statutory requirement PC9. Identify characteristics of post-blast fumes and take necessary precautions. PC10. Wears safety gear such as hard hat, respiratory protection, eye protection, ear protection PC11. Follow the manufacturer's instructions for care and safe operation of the equipment.
Knowledge and Understanding (K)	

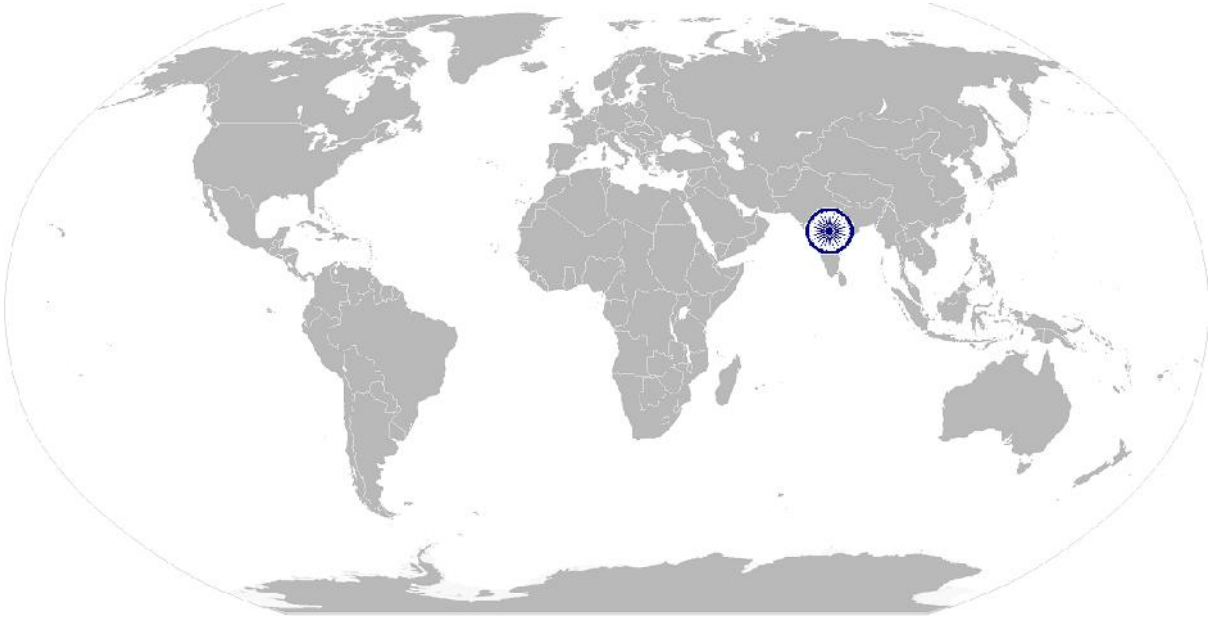
MIN/ N 0901 Health and Safety

A. **Regulatory context** (knowledge of safety guidelines specified by Director General of Mine Safety (DGMS))	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 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
Sector	Mining	Drafted on	15/12/2014
Sub-sector	Underground Mines	Last reviewed on	24/03/2015
Occupation	Mining Operations	Next review date	24/03/2017



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CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role SDL/ LHD Operator

Qualification Pack MIN/Q 0422

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 center (as per assessment criteria below)
4. Individual assessment agencies will create unique evaulations 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

				Marks Allocation	
		Total Mark (100)	**Out Of**	**Theory**	**Skills Practical**
1. MIN/ N0461 (Prepare SDL/ LHD)	PC1. Check oil and fluid levels in hydraulic tank, transfer gear boxes, crawler drive/ wheel drive units	**25**	2	1.5	0.5
	PC2. Check air/ fuel filter condition.		2	1.5	0.5
	PC3. Refill the grease Nipples.		2	1.5	0.5
	PC4. Check that all power sources are used and maintained in a proper working order (earth continuity and interlocking).		1	0.5	0.5
	PC5. Check that the gate end box controlling power supply to the machine is suitably interlocked with the auxiliary fan ventilating the blind heading to ensure that unless auxiliary fan is working the machine should not receive power.		1	0.5	0.5

	PC6. Check for all the safety features in proper working order – Audio Visual Alarm, headlight, control instrument panel, pressure gauge etc.		2	1.5	0.5
	PC7. Check condition of main brake, parking brake and brake release pump		1	0.5	0.5
	PC8. Check for proper functioning of power transmission unit and transmission shift controls		2	1.5	0.5
	PC9. Check to ensure that machine working area is clear of all obstructions		2	1.5	0.5
	PC10. Check proper tension of all crawler chain and working condition of wheel drive units/ propelling units		1	0.5	0.5
	PC11. Check the oil cooler radiator and clean the fins		2	1.5	0.5
	PC12. Check the physical condition of trailing cables, hose fittings and reeling/ unreeling features during each shift		2	1.5	0.5
	PC13. Before beginning with the task, clearly understand the dimensions and load carrying capacity of the machine, the work area, weight of the machine as well as the heavy load to ensure safety while in operation		1	0.5	0.5
	PC14. Perform no-load test before beginning of the shift to check: Operation of the running portion of the loader including control handles, levers and buttons Force on control handles and pedals Working of drive and other assemblies of machine Working of retracting part and conveyor		2	1.5	0.5
	PC15. Perform cleaning of the machine and ensure that it is free of dust, grease, loose stones etc. for proper upkeep and functioning of		1	0.5	0.5

	the machine				
	PC16. Maintain a checking/maintenance logbook to record all activities performed before starting the SDL/LHD as the case may be		1	0.5	0.5
	PC17. At the end of the shift, discuss about the condition of the machine while handing over to next shift operator and note the same in the record book		2	1.5	0.5
	PC18. Inform supervisor of problems that are beyond scope of his role.		2	1.5	0.5
		Total	**25**	**17**	**8**
2. MIN/ N0462 (Perform SDL/ LHD Operations)	PC1. Keep the headlights of the machine continuously 'ON' position during the operation of the machine	**25**	2	1.5	0.5
	PC2. Alert all personnel in the vicinity through pre-start audible warning , before starting the machine give sufficient time to move away to a safe place		2	1.5	0.5
	PC3. Use various audio-visual warning devices available in the machine such as hazard light, horn etc. to alert personnel during all times		2	1	1
	PC4. Monitor operation continuously so that, no one is present in front and behind the machine frame where he is not likely to be visible to the operator		1	0.5	0.5
	PC5. Lower the loading bucket and keep on ground when it is not in operation		1	0.5	0.5
	PC6. Isolate the machine using the provided mechanism(s) when the machine is not working		2	1.5	0.5
	PC7. Ensure that the machine is stationary and secured, when the machine is left standing on gradient		2	1.5	0.5

	PC8. Ensure that the machine is brought to rest and power is cut off before undertaking any repair, servicing or adjustment. Before carrying out any maintenance work on the bucket in raised position, it shall be secured with suitable support or device		2	1.5	0.5
	PC9. Assess the work site for operating dimensions of the machine (bucket lift height, tilt angle, turning radius etc.) and specific hazards to ensure safe and efficient operation		2	1.5	0.5
	PC10. Operate machine using the operating guidelines specified by the manufacturer		2	1p	1
	PC11. Stabilize the machine using brakes, chokes, anchorage and provisions provided before starting machine while working on an incline		1	0.5	0.5
	PC12. Effectively manoeuvre the joystick levers provided for loading and side tipping operations (if required)		2	1	1
	PC13. Ensure optimum distance from loading to dumping point to maximize yield		2	1	1
	PC14. Discharge the load safely at the position and in the manner designated by the supervisor		1	0.5	0.5
	PC15. Monitor that the ore is not overloaded on dump truck		1	0.5	0.5
	PC16. Deploy appropriate brake in different type of situation		2	1.5	0.5
	PC17. Ensure that the immediate work area is clear of personnel at all times of operation		2	1.5	0.5
	PC18. Inform supervisor of any problems while operating the machine		2	1	1
		Total	**25**	**15.5**	**9.5**

3. MIN/ N0463 (Perform basic maintenance and troubleshooting on SDL/ LHD)	PC1. Note machine operating hours in the log book provided to track and assess the right service schedule	**25**	2	1	1
	PC2. Monitor the specified levels of coolants, lubricants, engine oil, transmission oil etc. and replenish if required		2	1	1
	PC3. Grease all the grease nipples and pivot pins as required		2	1	1
	PC4. Check battery levels and condition of the terminals and carrying out minor adjustments if required		2	1	1
	PC5. Check the oil cooler radiator and clean the fins, top off coolant if required		2	1	1
	PC6. Check the physical condition of trailing cables, hose fittings and reeling/ unreeling features		2	1	1
	PC7. Check the condition of crawler chain and observe any looseness, cracks etc.		2	1	1
	PC8. Check and maintain the tyre rims, air pressure, wheel nuts and treads.		2	1	1
	PC9. Ensure that the machine is brought to rest and power is cut off before undertaking any repair, servicing or adjustment. Before carrying out any maintenance work on the bucket in raised position, it shall be secured with suitable support or device		2	1	1
	PC10. Ensure that no maintenance task on the engine is performed when running or still hot.		2	1	1
	PC11. Check the instrument panel and control gauge to identify out-of range readings to find the defect / cause of failure		2	1	1

	PC12. Ensure proper Lock out and Tag out scenario to avoid any untoward incident triggered due to unknowingly carried out operation of machine / system under maintenance		2	1	1
	PC13. Assess when the problem is beyond his competence and report the problem to suitably qualified and competent personnel		1	0.5	0.5
	PC14. Complete timely and legibly defect sheets as provided by the Organization		2	1	1
		Total	**25**	**12.5**	**12.5**
4. MIN/ N0901 (Health and Safety)	PC1. Comply with occupational health and safety regulations adopted by the employer.	**25**	2	1	1
	PC2. Follow mining operations procedures with respect to materials handling and accidents		3	2	1
	PC3. Follow the correct safety steps in case of accident or major failure		2	1	1
	PC4. Comply with safety regulations and procedures in case of fire hazard.		2	1	1
	PC5. Operate various grades of fire extinguishers.		3	2	1
	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		2	1	1
	PC7. Perform storage and transport of hazardous materials compliant with safety guidelines prescribed by DGMS.		3	2	1
	PC8. Deal with misfires as per statutory requirement		2	1.5	0.5
	PC9. Identify characteristics of post-blast fumes and take necessary precautions.		2	1.5	0.5
	PC10. Wears safety gear such as hard hat, respiratory protection, eye protection, ear protection		2	1	1
	PC11. Follow the		2	1	1

	manufacturer's instructions for care and safe operation of the equipment.				
		Total	**25**	**15**	**10**