

# Model Curriculum

## Rig Mounted Drill Operator

**SECTOR: MINING**  
**SUB-SECTOR: MINING OPERATION**  
**OCCUPATION: DRILLING & CUTTING**  
**REF ID: MIN/Q0202**  
**NSQF LEVEL: 4**



## Certificate

### CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

**SKILL COUNCIL FOR MINING SECTOR**

for the

**MODEL CURRICULUM**

Complying to National Occupational Standards of  
Job Role/ Qualification Pack: '**Rig Mounted Drill Operator**' QP No. '**MIN/ Q 0202 NSQF Level 4**'

Date of Issuance: **December 24<sup>th</sup>, 2015**

Valid up to: **March 31<sup>st</sup>, 2017**

*\* Valid up to the next review date of the Qualification Pack*

  
Authorised Signatory  
(Skill Council for Mining Sector)



## TABLE OF CONTENTS

<b>1. Curriculum</b>	<b>01</b>
<b>2. Trainer Prerequisites</b>	<b>05</b>
<b>3. Annexure: Assessment Criteria</b>	<b>06</b>

# Rig Mounted Drill Operator

## CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Rig Mounted Drill Operation”, in the “Mining” Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Rig Mounted Drill Operator		
Qualification Pack Name & Reference ID.	MIN/Q0202		
Version No.	1.0	Version Update Date	12 – 12 – 2015
Pre-requisites to Training	Preferable Class XII passed (Heavy Commercial Vehicle Driving License).		
Training Outcomes	<p>After completing this programme, participants will be able to:</p> <p><b>Gain familiarity with the rig mounted drill machine:</b> General understanding of rig mounted drill, drilling methods and tools &amp; basic maintenance of machine</p> <p><b>Become well versed with Environment Health &amp; Safety:</b> Well versed with health and safety measures in terms of personal safety and equipment safety.</p> <p><b>Identify and use basic tools, equipment &amp; materials:</b> Arig mounted drill operator becomes well versed in operating a drill machine</p>		

This course encompasses 5 out of 5 National Occupational Standards (NOS) of “Rig Mounted Drill Operator” Qualification Pack issued by “SSC: Skill Council for Mining Sector”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<b>Introduction</b>  <b>Theory Duration</b> (hh:mm) 05:00  <b>Practical Duration</b> (hh:mm) 08:00  <b>Corresponding NOS Code</b> Bridge Module	Understanding of rig mounted drills  Understanding of Main components and their functions description	bucket loader, front loader, front-end loader, pay-loader, scoop, shovel, skip loader, or wheel loader
2.	<b>Equipment Description</b>  <b>Theory Duration</b> (hh:mm) 05:00  <b>Practical Duration</b> (hh:mm) 08:00  <b>Corresponding NOS Code</b> Bridge Module	Recognize <ul style="list-style-type: none"> <li>• Equipment operation</li> <li>• Equipment technology/engineering</li> <li>• Equipment documentation</li> <li>• Drilling methods and drilling tools</li> <li>• Basic maintenance on the machine</li> </ul>	
3.	<b>Prepare Drill</b>  <b>Theory Duration</b> (hh:mm) 12:00  <b>Practical Duration</b> (hh:mm) 20:00  <b>Corresponding NOS Code</b> MIN/N0205	Knowledge of <ul style="list-style-type: none"> <li>• preparing the Drill for activities that need to be carried out during a shift</li> <li>• Different types of drills and their specific use.</li> <li>• Conducting pre-operation checks to ensure the Drill is safe to use</li> <li>• Recording details of checking and maintenance</li> <li>• Check various controls, gauges, warning lamp and other safety devices</li> <li>• Ensure that crown blocks are mounted securely.</li> <li>• Check that drilling equipment is in safe operating condition.</li> <li>• Perform visual checks to detect cracks, wear and tear or any damage that could result in structural weakness</li> <li>• Keep footplates and steps clean and free from mud, dirt and oil.</li> </ul>	Drill Machine, Hammer, Signage, Sample Helmet, gloves, harness, earplugs, goggles, node mask.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
4.	<b>Perform Drill Operations</b>  <b>Theory Duration</b> (hh:mm) 32:00  <b>Practical Duration</b> (hh:mm) 95:00  <b>Corresponding NOS Code</b> MIN/N0206	<ul style="list-style-type: none"> <li>About performing drilling operation using a rig mounted drill machine.</li> <li>Travelling of the drill by Trimming or Towing</li> <li>Knowledge of Positioning and mounting the drill.</li> <li>Perform drilling operation.</li> </ul>	Drill Machine, Hammer, Signage, Drilling Machines. Diesel Engines, Electric Motors and compressors.
5.	<b>Daily maintenance and troubleshooting</b>  <b>Theory Duration</b> (hh:mm) 08:00  <b>Practical Duration</b> (hh:mm) 15:00  <b>Corresponding NOS Code</b> MIN/N0207	<ul style="list-style-type: none"> <li>Able to perform routine maintenance and troubleshooting tasks on the Drill.</li> <li>Basic diagnostics and Troubleshooting</li> <li>maintenance in accordance with the manufacturer's recommendations and company procedures</li> <li>Ensure the machine is on firm and level ground before attempting to carry out any maintenance activity.</li> </ul>	Drill Machine, Hammer, Signage, Drilling Machines. Diesel Engines, Electric Motors and compressors
6.	<b>Documentation &amp; Reporting - Driller</b>  <b>Theory Duration</b> (hh:mm) 05:00  <b>Practical Duration</b> (hh:mm) 15:00  <b>Corresponding NOS Code</b> Bridge Module	<ul style="list-style-type: none"> <li>about carrying out reporting and documentation</li> <li>Report problems/incidents as applicable in a timely manner</li> <li>Report to the appropriate authority as laid down by the employer</li> <li>Record details accurately using the appropriate format</li> </ul>	
7.	<b>Health &amp; Safety</b>  <b>Theory Duration</b> (hh:mm) 10:00  <b>Practical Duration</b> (hh:mm) 14:00	<ul style="list-style-type: none"> <li>This unit is about health and safety measures critical in open-cast mines</li> <li>Health and safety measures critical for personnel working in open-cast mines</li> <li>Comply with occupational health and safety regulations adopted by the employer.</li> <li>Follow mining operations procedures with respect to materials handling and accidents.</li> </ul>	Gloves, Safety shoes, Safety goggles, Safety helmet, Fire extinguisher, Types of log book, First Aid box

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<b>Corresponding NOS Code</b> MIN / N0204	<ul style="list-style-type: none"> <li>Adhere to the safety guidelines specified by Directorate General of Mine Safety (DGMS)).</li> </ul>	
	<b>Total Duration</b>  <b>Theory Duration (hh:mm)</b> <b>72:00</b>  <b>Practical Duration (hh:mm)</b> <b>168:00</b>	Unique Equipment Required:  Drill Machine, Hammer, Signage, Drilling Machines. Diesel Engines, Electric Motors and compressors, Sample Helmet, gloves, harness, earplugs, goggles, node mask, Mason trowel, brick harmer, drill machine.	

*Grand Total Course Duration: **240 Hours, 0 Minutes***

*(This syllabus/ curriculum has been approved by **SSC: Skill Council for Mining Sector**)*

## Trainer Prerequisites for Job role: “Rig Mounted Drill Operator” mapped to Qualification Pack: “MIN/Q0202”

Sr. No.	Area	Details
1	Description	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “MIN/Q0202”.
2	Personal Attributes	Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training. Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well-organised and focused, eager to learn and keep oneself updated with the latest in the mentioned field.
3	Minimum Educational Qualifications	Preferably class XII passed.
4a	Domain Certification	Certified for Job Role: “Rig Mounted Drill Operator” mapped to QP: “MIN/Q0202”. Minimum accepted score for domain certification will be 85%.
4b	Platform Certification	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “SSC/Q1402”. Minimum accepted score for platform certification will be 90%.
5	Experience	Heavy Commercial Vehicle Driving License. Technical and gallery training as per first schedule, Mining Vocational Training Rules (MVTR) 1966 suggested but not mandatory.



## Annexure: Assessment Criteria

Assessment Criteria for Rig Mounted Drill Operator	
Job Role	Rig Mounted Drill Operator
Qualification Pack	MIN/Q0202
Sector Skill Council	Mining

Sr. No.	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 of the theory/knowledge will be based on written test/viva-voce or both while skill test shall be hands on practical. Behaviour and attitude will be assessed while performing the task.
3	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria
5	To pass the Qualification Pack, every trainee should score a minimum of 70% in skills, 30 % in knowledge and 70% in practical including Behaviour separately in each attributes.
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			
Assessable Outcome	Assessment criteria	Total Mark (100)	Out Of	Theor y	Skills Practica l
<b>1. MIN/N 0205 (Prepare Drill)</b>	PC1. Adhere to time limits given by supervisor	<b>20</b>	1	1	0
	PC2. Check various controls, gauges, warning lamp and other safety devices		1	0	1
	PC3. Ensure that crown blocks are mounted securely.		1	0	1
	PC4. Check all hose connections are in order, if using a compress air drill		2	0	2
	PC5. Check that drilling equipment is in safe operating condition.		2	1	1
	PC6. Perform visual checks to detect cracks, wear and tear or any damage that could result in structural weakness		1	0	1
	PC7. Visually inspects to detect cracks or fractures in welded joints.		1	1	0
	PC8. Apply grease to all greasing pins and pivot points		2	0	2
	PC9. Check under carriage and superstructure in the drill.		1	0	1
	PC10. The drilling site is clear of other mine workers to avoid any accidents.		2	0	2
	PC11. Follow the manufacturer's instructions which apply to the care and safe operation of the Drill.		2	1	1
	PC12. Keep footplates and steps clean and free from mud, dirt and oil		1	0	1
	PC13. Maintain a checking/maintenance logbook to record all activities performed before starting the Drill		2	1	1
	PC14. Inform supervisor of problems that are beyond scope of his role.		1	1	0
		<b>Total</b>	<b>20</b>	<b>6</b>	<b>14</b>
<b>2. MIN/N 0206 (Perform Drill Operations)</b>	PC1. Plan and organize the job according to given instructions.	<b>30</b>	1	1	0
	PC2. Organize daily consumables according to the day's plan		2	0	2
	PC3. Operate propelling motor control levers to smoothly move the drill machine in all four directions.		3	1	2
	PC4. Ensure all necessary precautions are adhered to before towing the drill to a distant site.		1	1	0
	PC5. Raise drill guide to 1.5m above ground level and make it horizontal to prevent any damage in transit.		3	0	3
	PC6. Ensure that the OEM prescribed limit for angles of inclination are followed during trimming and setting up of drills.		2	1	1

				Marks Allocation	
Assessable Outcome	Assessment criteria	Total Mark (100)	Out Of	Theor y	Skills Practica l
	PC7. Ensure a stable base for mounting the drill		3	1	2
	PC8. Avoid accidental fall of drill rod / hammer / bit in the drilled blast hole		2	0	2
	PC9. Adjust the tracks by methodically manipulating the positions of oscillation cylinder valve and hydraulic track valve.		1	0	1
	PC10. Follow drill depth plans and ensure quality of holes by dipping and re-drilling before leaving drill area		3	1	2
	PC11. Ensure that the highest level of quality is consistently maintained		3	1	2
	PC12. Ensure all associated products (couplings/rods etc) are used to their maximum potential, while ensuring their sustainability		2	1	1
	PC13. Reduce downtime and wastage		1	0	1
	PC14. Demonstrate caution against hazards of drill machine in operation.		3	1	2
		<b>Total</b>	<b>30</b>	<b>9</b>	<b>21</b>
<b>3. MIN/N 0207 (Perform basic maintenance and troubleshooting on Drill)</b>	PC1. Track machine operating hours to assess the right service schedule.	<b>20</b>	1	1	0
	PC2. Clean air filter dust bowls		1	0	1
	PC3. Clean footplates, pedals and steps free from mud, dirt, ice and snow		1	0	1
	PC4. Drain water and sediment /fuel separators		1	0	1
	PC5. Replenish coolants, lubricants and fluids		1	0	1
	PC6. Grease all greasing pins and pivot points		1	0	1
	PC7. Check battery levels and condition of the terminals and carrying out minor adjustments if required.		1	0	1
	PC8. Check and maintain the tyre rims, air pressure, wheel nuts and treads.		1	0	1
	PC9. Check structural safety of the drill machine.		1	0	1
	PC10. Complete timely and legibly daily/weekly maintenance sheets		1	0	1
	PC11. Ensure the machine is on firm and level ground before attempting to carry out any maintenance activity.		2	1	1
	PC12. Ensure that no maintenance task on the engine is performed when running or still hot.		2	1	1
	PC13. Ensure proper Lock out and Tag out scenario to avoid any untoward incident triggered due to unknowingly operation of machine / system under		2	1	1

				Marks Allocation	
Assessable Outcome	Assessment criteria	Total Mark (100)	Out Of	Theor y	Skills Practica l
	maintenance				
	PC14. Assess when the problem is beyond his competence and report the problem to suitably qualified and competent personnel		2	1	1
	PC15. Complete timely and legibly defect sheets as provided by the company		2	1	1
		<b>Total</b>	<b>20</b>	<b>6</b>	<b>14</b>
<b>4. MIN/N 0208 (Carry Out Reporting and Logging-Drilling Operator)</b>	PC1. Report problems/incidents as applicable in a timely manner	<b>10</b>	1	1	0
	PC2. Report to the appropriate authority as laid down by the employer		1	1	0
	PC3. Follow reporting procedures as prescribed by the employer		1	0	1
	PC4. Identify documentation to be completed relating to one's role		2	0	2
	PC5. Record details accurately using the appropriate format		2	0	2
	PC6. Complete all documentation within stipulated time.		2	0	2
	PC7. Make sure documents are available to all appropriate authorities to inspect		1	1	0
		<b>Total</b>	<b>10</b>	<b>3</b>	<b>7</b>
<b>5. MIN/N 0204 (Health and Safety)</b>	PC1. Comply with occupational health and safety regulations adopted by the employer.	<b>30</b>	3	1	2
	PC2. Follow mining operations procedures with respect to materials handling and accidents		4	1	3
	PC3. Follow the correct safety steps in case of fire, accident, major failure		3	1	2
	PC4. Work responsibly and carefully so as not to put the health and safety of self or others at risk.		3	0	3
	PC5. Perform storage and transport of hazardous materials compliant with safety guidelines prescribed by DGMS.		4	1	3
	PC6. Comply with safety regulations and procedures in case of fire hazard.		3	2	1
	PC7. Operate various grades of fire extinguishers.		3	1	2
	PC8. Work responsibly and as safe and careful as possible so as not to put the health and safety of self or others at risk, including members of the public		3	0	3
	PC9. Demonstrate careful practices in handling explosives and heavy machinery.		4	2	2

		Marks Allocation			
Assessable Outcome	Assessment criteria	Total Mark (100)	Out Of	Theor y	Skills Practica l
		Total	30	9	21
	QP Total		100	30	70



### **Skill Council for Mining Sector**

FIMI House, B-311, Okhla Industrial Area, Phase-I, New Delhi-110 020