

# NSQF QUALIFICATION FILE GUIDANCE

Version 6: Draft of 08 March 2016

**NSDA Reference**

*To be added by NSDA*

## CONTACT DETAILS OF THE BODY SUBMITTING THE QUALIFICATION FILE

### **Name and address of submitting body:**

Skill Council for Mining Sector (SCMS)  
FIMI House, B-311, Okhla Industrial, Phase-1  
New Delhi-110020

### **Name and contact details of individual dealing with the submission**

**Name:** A. K. Bhandari

**Position in the organisation:** Chief Executive Officer

### **Address if different from above**

Same as above

**Tel number(s):** +91-11-26814593

**E-mail address:** scms@skillcms.in

## **List of documents submitted in support of the Qualifications File**

1. Sector Profiling
2. Occupational Map & Progression matrix
3. Protocol for Affiliation of Assessment Bodies and Assessment Framework
4. List of Companies which participated in the NOS development process including validation
5. Validation of Occupational Standards by Industry

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## SUMMARY

<b>Qualification Title</b>	Surface Miner Operator
<b>Qualification Code</b>	MIN/Q0210
<b>Nature and purpose of the qualification</b>	<p>This is a Qualification Pack (QP), corresponding to Level – 4 and includes four (4) NOSs.</p> <p>Targeted learners: This qualification will equip the trainees to become Surface Miner Operator. The operator is fully responsible for operation of the Surface Miner Machine and is accountable to recover minerals as per plan.</p> <p>Main purpose of the qualification – is to get unemployed people into work and also to upgrade the skills of Skilled Operators already in employment and to enable them to take up this roles.</p>
<b>Body/bodies which will award the qualification</b>	Skill Council for Mining Sector.
<b>Body which will accredit providers to offer courses leading to the qualification</b>	Skill Council for Mining Sector.
<b>Body/bodies which will carry out assessment of learners</b>	<ol style="list-style-type: none"><li>1. Anant Learning and Development, New Delhi.</li><li>2. Aspiring minds, New Delhi</li><li>3. Eduworld Consultants Pvt. Ltd, Punjab</li><li>4. India Skills Pvt. Ltd, New Delhi</li><li>5. Navriti Technologies Private limited, Karnataka</li><li>6. Prima Competencies Pvt. Ltd., New Delhi</li><li>7. Skill Mantra Edutech Consulting India Pvt. Ltd, MP</li><li>8. Trendsetters Skill Assessors Pvt. Ltd, Haryana</li><li>9. METTL, New Delhi</li><li>10. MFEELD, New Delhi</li><li>11. SP Institute of Workforce Development, Uttar Pradesh</li></ol>
<b>Occupation(s) to which the qualification gives access</b>	<p>Surface Miner Operator.</p> <p>Brief Job Description:</p> <p>A Surface Miners (SMs) is a direct rock-cutting machine and directly cut the rock by rotational motion of the cutting drum minerals from near the earth's surface in open pit or strip mining operations. The cur rocks are directly discharged on dump trucks or side casted. The operator is fully responsible for operation of the Surface Miner Machine and is accountable to recover minerals as per plan.</p>
<b>Licensing requirements</b>	HEMM License required and must undergo Technical and gallery training as per first schedule, Mining Vocational Training Rules (MVTR) 1966.

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<b>Level of the qualification in the NSQF</b>	4		
<b>Anticipated volume of training/learning required to complete the qualification</b>	250 Hours		
<b>Entry requirements and/or recommendations</b>	ITI (Two year)		
<b>Progression from the qualification</b>	<p>This qualification provides entry to one or more of the following:</p> <ul style="list-style-type: none"> <li>- Horizontal access at the same NSQF Level: Other HEMM operator roles.</li> <li>- Vertical access at next NSQF level : Mining mate / Mining Supervisor roles with requisite up skilling and qualification enhancement.</li> </ul>		
<b>Planned arrangements for the Recognition of Prior learning (RPL)</b>	RPL to be conducted for in-service workers with PSUs and private industry as per guidelines laid out by MSDE.		
<b>International comparability where known</b>	NA		
<b>Date of planned review of the qualification.</b>	26/09/2019		
<b>Formal structure of the qualification</b>			
<b>Title of component and identification code.</b>	<b>Mandatory/ Optional</b>	<b>Estimated size (learning hours)</b>	<b>Level</b>
Includes 4 NOSs -			
Prepare the Surface Miner MIN/N 0236	M	250 Hours	4
Perform Surface Miner Operation MIN /N 0237	M		
Reporting and Documentation – surface miner operation MIN/N 0238	M		
Comply with Workplace Health and Safety MIN/N 0901	M		

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## **SECTION 1** **ASSESSMENT**

### **Body/Bodies which will carry out assessment:**

#### **Name of assessment bodies:**

1. Anant Learning and Development, New Delhi.
2. Aspiring minds, New Delhi
3. Ayman Trainer Wings Pvt. Ltd, Haryana
4. Eduworld Consultants Pvt. Ltd, Punjab
5. India Skills Pvt. Ltd, New Delhi
6. Navriti Technologies Private limited, Karnataka
7. Prima Competencies Pvt. Ltd., New Delhi
8. Skill Mantra Edutech Consulting India Pvt. Ltd, MP
9. Trendsetters Skill Assessors Pvt. Ltd, Haryana
10. METTL, New Delhi
11. MFEELD, New Delhi
12. SP Institute of Workforce Development, Uttar Pradesh

### **Will the assessment body be responsible for RPL assessment?**

Yes. RPL assessment process as laid out by MSDE.

### **Describe the overall assessment strategy and specific arrangements which have been put in place to ensure that assessment is always valid, consistent and fair and show that these are in line with the requirements of the NSQF:**

In line with defined assessment criteria, comprises written test, viva and practical assessment through certified assessors only. It has planned to use audio-video recording of assessment.

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## ASSESSMENT EVIDENCE

Complete a grid for each component as listed in “Formal structure of the qualification” in the Summary.

NOTE: this grid can be replaced by any part of the qualification documentation which shows the same information – ie Learning Outcomes to be assessed, assessment criteria and the means of assessment.

## CRITERIA FOR ASSESSMENT OF TRAINEES

**Job Role** Surface Miner Operation

**Qualification Pack** MIN/Q 0210

**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. Behavior 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 Centre (as per assessment criteria given)
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training Centre based on these 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.

Assessment outcomes	Assessment Criteria for outcomes	Total Mark (100)	Out Of	Marks Allocation	
				Theory	Skills Practical
			100	30	70
1. MIN/N0236: Prepare the Surface Miner.	PC1. Check for any visible damage or structural cracks etc. in the five sections of the Surface miner - (1) Mainframe. (2) Conveying Unit. (3) Drive Unit. (4) Crawler Unit. (5) Cutting Unit.	30	3	1	2

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	PC2. Check all gauges and meters readings are proper and functioning correctly. Check for any abnormal reading on the hour meter, engine temperature meter, engine rpm (Tachometer), oil pressure gauge, hydraulic pressure gauges- (system control pressure, conveyor pressure, track drive pressure), battery charging indicator, oil pressure of cutting drum, filter contamination warning lights etc.		3	1	2
	PC3. Check for any abnormal noise or vibration.		2	0	2
	PC4. Check the diesel engine & oil level.		2	0	2
	PC5. Check the water spray is functional.		2	1	1
	PC6. Check the gradient and levelling sensors are working properly; Crawler track, steered and height adjustment are set right.		2	1	1
	PC7. Check the right type of cutting tools has been mounted. Check the cutting drum for any damaged cutting tool. Get the worn out teeth replaced. Check that the scraper blades are mounted properly.		3	1	2
	PC8. Check the Slewing ring.		2	1	1
	PC9. Check all regular greasing and lubrication have been done as per OEM guidelines.		3	1	2
	PC10. Get diesel engine dust filters cleaned / replaced.		2	1	1
	PC11. Maintain a checking/maintenance logbook to detail all activities conducted before starting the surface miner.		2	1	1
	PC12. Inform Technician and Electricians and OEM engineer of those problems that extend beyond scope of one's role.		2	1	1
	PC13. Check for any cut or damage electric cable (for Electric driven surface miners).		2	0	2
		<b>Total</b>	<b>30</b>	<b>10</b>	<b>20</b>

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2. MIN/N0237: Perform Surface Miner Operation.	PC1. Decide mode of cutting or follow direction of mine engineer – i. Continuous cutting in Harvesting mode ii. Block operations with ramp cutting.	<b>30</b>	2	1	1
	PC2. Plan and execute shift operation as per plan.		3	1	2
	PC3. Operate the machine in a safe and proper way.		5	0	5
	PC4. Coordinate with helper to ensure that no unwarranted foreign materials or unauthorised person is present in the cutting area.		2	1	1
	PC5. Continuously monitor (visually) that right size of aggregates being produced.		3	1	2
	PC6. Set cutting depth based on rock characteristics and mining plan.		3	1	2
	PC7. Ensure water spray is functional all the time to ensure dust suppression.		3	1	2
	PC8. Periodically check for any cutting teeth damage, scrapper misalignment, conveyor functionality etc.		3	0	3
	PC9. Continuously monitor all console gauges and sensors and alarm messages and the hour meter, engine temperature meter, engine rpm (Tachometer), oil pressure gauge, hydraulic pressure gauges- (system control pressure, conveyor pressure, track drive pressure), battery charging indicator, oil pressure of cutting drum, filter contamination warning lights etc. Ensure that corrective actions are taken in case of any error message.		3	1	2
	PC10. Check target fulfilment of rock cutting and revise planning accordingly.		3	1	2
	<b>Total</b>	<b>30</b>	<b>8</b>	<b>22</b>	
3. MIN/N0238: Reporting and Documentation- Surface Miner	PC1. Record shift operation particulars, including start and end time, rock cutting output achieved, consumption of any consumables and spares and cutting tools etc., consumption of fuel	<b>20</b>	3	1	2



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Operation	etc.				
	PC2. Update the above data accurately on log books using the appropriate format.		2	0	2
	PC3. Note any observation on rock characteristics,		2	1	1
	PC4. Document any machine problem faced during operation.		3	0	3
	PC5. Document and make small notes for any work to be carried out in case of breakdown or machine trouble.		2	0	2
	PC6. Report any problems/incidents encountered during operation in a timely manner		2	1	1
	PC7. Report safety violations and any safety hazard to the appropriate authority as lay down by the safety process.		2	1	1
	PC8. In case of any accident, complete all documentation within stipulated time.		2	0	2
	PC9. Make sure documents are available to all appropriate authorities to inspect.		2	1	0
		<b>Total</b>	<b>20</b>	<b>5</b>	<b>15</b>
4. MIN/N0901: Worksite Health and Safety	PC1. Comply with occupational health and safety regulations adopted by the employer.	<b>20</b>	2	1	1
	PC2. Follow mining operations procedures with respect to materials handling and accidents.		2	1	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	0	2
	PC5. Operate various grades of fire extinguishers.		2	1	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		2	0	2

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	materials compliant with safety guidelines prescribed by DGMS.				
	PC8. Deal with misfires as per statutory requirement		1	1	0
	PC9. Identify characteristics of post-blast fumes and take necessary precautions.		2	1	1
	PC10. Wears safety gear such as hard hat, respiratory protection, eye protection, ear protection.		1	0	2
	PC11. Follow the manufacturer's instructions for care and safe operation of the equipment.		1	0	1
		<b>Total</b>	<b>20</b>	<b>7</b>	<b>13</b>
		<b>QP Total</b>	<b>100</b>	<b>30</b>	<b>70</b>

### Means of assessment 1

Written test, viva and practical assessment, in line with defined assessment criteria and approved assessment policy.

### Pass/Fail

To pass the Qualification Pack, every trainee should score a minimum of 70% in every NOS.

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### SECTION 2

#### EVIDENCE OF LEVEL

Summary of Direct Evidence:

Generic NOS is/are linked to the overall authority attached to the job role.

#### OPTION A

Title/Name of qualification/component: <b>Surface Miner Operator.</b> QP Code: <b>MIN/Q0210</b>		Level: <b>4</b>	
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
Process	<b>This process requires the individual to carry out rock cutting operation using Surface Miner, a standard machinery. The cutting process demands a team work. It requires the Operator to undertake surface mining operations in predictable environments regularly as per direction of mines manager. The individual should also be skilled to identify grade of mineable rocks/minerals to produce the desired outcomes.</b>	<b>Work in mining environment as per direction of mines manager/supervisor. Set cutting depth based on rock characteristics and mining plan. It operates the machinery in smooth way in rotational order (curve).</b>	4
Professional knowledge	<b>Knowledge of Surface Miner machine in terms of operating principles, key features, operational parameters, servicing requirements etc.</b>  <b>Check and initiate rectification of for any visible damage or structural cracks etc. in the five sections of the Surface miner -</b> <b>(1) Mainframe.</b> <b>(2) Conveying Unit.</b> <b>(3) Drive Unit.</b> <b>(4) Crawler Unit.</b> <b>(5) Cutting Unit.</b>	<b>Factual knowledge of mine site, geography of mine location and equipment etc. including health &amp; safety guidelines.</b>	4

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NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
	<p>Check all gauges and meters readings are proper and functioning correctly.</p> <p>Check for any abnormal reading on the hour meter, engine temperature meter, engine rpm (Tachometer), oil pressure gauge, hydraulic pressure gauges- (system control pressure, conveyor pressure, track drive pressure), battery charging indicator, oil pressure of cutting drum, filter contamination warning lights etc. Operate the machine in a safe and proper way.</p> <p>Coordinate with helper to ensure that no unwarranted extraneous materials or unauthorised person is present in the cutting area.</p> <p>Set cutting depth based on rock characteristics and mining plan.</p>		
Professional skill	<p>Make decisions pertaining to the concerned area of work and take instruction from supervisor. Decide on types of tools and tackles to be used and when to conduct the routine maintenance. Plan and organize the work order and jobs. Organize all process manuals so that sorting / accessing information is easy.</p>	<p>Recall and demonstrate practical skill, routine and repetitive in narrow range of application, using appropriate rule and tool, using quality concepts.</p>	4
Core skill	<p>It includes, note down observations (if any), write information documents or enter the information in online ERP systems –if any, read operators’ manual and read and understand pre-operation checklist/ activity logbook.</p>	<p>Language to communicate written or oral, with required clarity, skill to basic arithmetic and algebraic principles, basic understanding of social political and natural environment.</p>	4

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Title/Name of qualification/component: <b>Surface Miner Operator</b> . QP Code: <b>MIN/Q0210</b> <span style="float: right;">Level: <b>4</b></span>			
NSQF Domain	Outcomes of the Qualification/Component	How the job role relates to the NSQF level descriptors	NSQF Level
Responsibility	A Surface Miners (SMs) is a direct rock-cutting machine and directly cut the rock by rotational motion of the cutting drum minerals from near the earth's surface in open pit or strip mining operations. The cur rocks are directly discharged on dump trucks or side casted. The operator is fully responsible for operation of the Surface Miner Machine and is accountable to recover minerals as per plan.	Responsibility for own work and learning.	4

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## SECTION 3

### EVIDENCE OF NEED

**What evidence is there that the qualification is needed?**

SCMS met limestone / coal producing industry players who are using latest technology surface miners for rock cutting and loading of ore/minerals. It carried out comprehensive survey and collected feedback from industry with respect to roles for which qualification packs development are required. It has estimated about 2000 surface miner are being used in the country for which RPL may also needs to be designed. The occupational map was finalised accordingly. The need of this particular qualification was revalidated during the comprehensive interaction with Industry in the process of seeking their input for QP/NOS development.

**What is the estimated uptake of this qualification and what is the basis of this estimate?**

- Skills Gap analysis Reports for industry demand.
- Approx. 1000 yearly certification has been estimated.

**What steps were taken to ensure that the qualification(s) does/do not duplicate already existing or planned qualifications in the NSQF?**

- NSDC list of Approved and Under-Development QPs were checked prior to commissioning the work.
- NSDC QRC team also confirmed the same.
- Checked at NQR website [www.nqr.gov.in](http://www.nqr.gov.in)

**What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated?**

- SCMS Review committee will review all QP/NOS at regular periodicity or as per NSDC guidelines.
- Review will be based on –
  - a) Revalidation of minimum requisites to perform in a Job role from pan India industry partners.
  - b) Any change in technology and process relevant to the particular QP and Job roles.

**Has the qualification been through a formal approval procedure(s)?**

(If so, explain the process and the outcome.)

Yes, NSDC QRC process has been adhered to. This includes minimum 30 validations for the QP from employers in the sector. This has been across small, medium and large companies.

**What arrangements are in place to monitor and review the qualification(s)? What data will be used and at what point will the qualification(s) be revised or updated?**

SCMS Review committee will review all QP/NOS at regular periodicity or as per NSDC guidelines. The review will factor in -

- Feedback from the Industry, Industry Association and training institutes

**What arrangements are in place to inform people about the qualification(s) and the advantages it offers?**

- Employer workshops for buy-in and recognition
- Training centres are being enrolled and informed of the potential
- Counselling sessions by training provider for potential recruits are being encouraged

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## SECTION 4

### EVIDENCE OF PROGRESSION

**What steps have been taken in the design of this or other qualifications to ensure that there is a clear path to other qualifications in this sector?**

**This qualification allows Horizontal and vertical mobility options.**

Potential mobility options are –

- a) Horizontal: Other HEMM operator roles.
- b) Vertical: Mining mate / Mining Supervisor roles with requisite upskilling and qualification enhancement.

Businesses or organisations are expected to use this qualification as a basis in recruiting workers

Annexure 1: Occupational Map