



**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 standards 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 - Screen & Crusher Operator**

SECTOR: Iron & Steel

SUB-SECTOR: Steel, Sponge Iron, Ferro Alloys, Re-Rollers, Refractory

REFERENCE ID: ISC/Q0102

ALIGNED TO: NCO-2004/NIL

Title of Job: The job is all about optimising the yield of various raw materials e.g. coke, sinter, iron ore, lime stone, dolomite, bauxite, manganese etc. which are required to be fed into blast furnace for iron making. This includes cliffing/breaking various oversized raw materials and then separating the desired range of their size fractions as attributed to them and suitable for smooth and efficient blast furnace operation. This also includes separation of under sized raw materials step by step through various types of screens, grizzly's or grate bars of different size specifications.

Personal Attributes: This job requires the individual to work independently as well as in teams. He should be physically fit, not having colour blindness , having analytical skills, problem solving attitude, high concentration levels and willingness to work in a factory environment.



Job Details

Qualifications Pack Code	ISC/Q0102		
Job Role	Screen & Crusher Operator		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron & Steel	Drafted on	13/11/2014
Sub-sector	Steel, Sponge Iron, Ferro Alloys, Re-Rollers, Refractory	Last reviewed on	25/03/2015
Occupation	Raw Material Handling	Next review date	25/03/2016

Job Role	Screen & Crusher Operator
Role Description	The job is all about controlling continuous operation of various makes of crushers, ball mills, screens, grate bars, grizzly's etc. as applicable to obtain optimum size fractions of different raw materials charged into the blast furnace for iron making (Hot metal production).
NSQF level	3
Minimum Educational Qualifications	Class 10 <sup>th</sup> Pass
Maximum Educational Qualifications	ITI Pass
Training (Suggested but not mandatory)	<ul style="list-style-type: none"> <li>• Induction training for material handling at steel plant</li> <li>• 6 months on job training (mandatory)</li> <li>• Job specific safety training</li> <li>• Awareness programme for pollution control</li> </ul>
Experience	<ul style="list-style-type: none"> <li>• 0 to 1 year of experience in a similar function under an experienced and qualified Supervisor</li> <li>• In lieu of minimum qualification the incumbent should have 5 - 6 years of experience as helper to supervisor</li> </ul>
Occupational Standards (OS)	<p>Compulsory:</p> <p><a href="#">ISC/N0105: Carry out inspection and monitor the screening and crushing unit</a></p> <p><a href="#">ISC/N0106: Carry out operation of screening and crushing Unit</a></p>



	<p><a href="#">ISC/N0107: Carry out basic maintenance activities of screening and crushing unit</a> <a href="#">ISC/N0008: Use basic health and safety practices at workplace</a> <a href="#">ISC/N0009: Work effectively with others</a></p> <p>Optional:</p> <p>N/A</p>
Performance Criteria	As described in the relevant NOS units



Definitions

Keywords /Terms	Description
Core Skills/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 NOS, these include communication related skills that are applicable to most job roles.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of NOS.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
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.
National Occupational Standards (NOS)	NOS are Occupational Standards which apply uniquely in the Indian context
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Organisational Context	Organisational 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.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
Qualifications Pack(QP)	Qualifications Pack comprises the set of NOS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Scope	Scope is the set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on the quality of performance required.
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.
Sub-functions	Sub-functions are sub-activities essential to fulfil the achieving the objectives of the function.
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Unit Code	Unit Code is a unique identifier for a NOS unit, which can be denoted with an 'N'
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.
Vertical	Vertical may exist within a sub-sector representing different domain areas or the client industries served by the industry.
Keywords /Terms	Description
NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
OEM	Original Equipment Manufacturer
OS	Occupational Standard(s)
QP	Qualifications Pack
5 S	Technique of maintaining orderliness –Japanese terminology
CP	Control Plan
WI	Work Instructions

**Acronyms**



ISC/N0105: Carry out inspection and monitor the screening and crushing unit

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## Overview

This unit is about understanding the assigned job of inspection and monitoring of the screening and crushing unit.



Unit Code	ISC/N0105
Unit Title (Task)	Carry out inspection and monitor the screening and crushing unit
Description	This unit is about understanding the assigned job of inspection and monitoring of the screening and crushing unit.
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>Understand the assigned job in accordance with prior planning</li> <li>Carry out the routine inspection of screening and crushing unit</li> <li>Understand the importance of proper functioning of the screening and crushing system and continuous monitoring for uninterrupted operation</li> </ul>
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Understand the assigned job in accordance with prior planning	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Collect and interpret information from previous day/shift logbook            PC2. Interpret the log book to understand the readiness of the crusher/ball mill, screens, grate bars, grizzly's, sheave etc.            PC3. Plan to execute the assigned job            PC4. Seek clarification from supervisor in case of any doubt</p>
Carry out the routine inspection of screening and crushing unit	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC5. Ensure availability of the checklist for regular inspection            PC6. Inspect conveyor galleries for cleanliness            PC7. Inspect physical health of belts conveyor for scratch, cut, hole, piled-off ply and its training for proper running. For chain conveyor inspect the physical condition of its tray and links            PC8. Inspect rollers (bolts, troughing and return), roller stands, lagging of H.E. &amp; T.E. drums, physical condition of T.E. drum stand, structure and tension screws            PC9. Inspect gravity take-up pulley wherever required            PC10. Inspect crusher teeth, segment, roll. Shaft brush and crusher gap            PC11. Inspect ball mill wherever necessary            PC12. Inspect grate bars, grills, grizzly rolls, discs, gear trains and oil pumps etc.            PC13. Inspect the screens/sheave, vibration motors, "V" belts etc.            PC14. Inspect all relevant equipment as well as safety interlocking's, pull chords, heat sensors, speed pick-up relays etc. wherever applicable            PC15. Inspect pollution control/dust catching systems for their control level and efficiency            PC16. Ensure appropriate display of placards for units under shut-down and maintenance            PC17. Escalate deviations or abnormalities to supervisor</p>

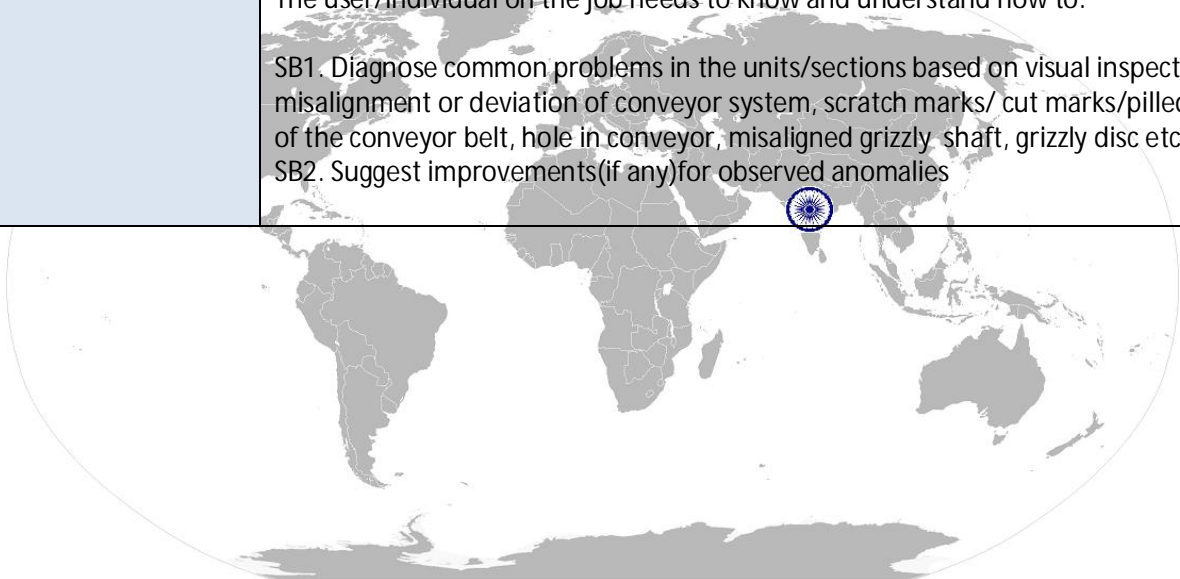


Understand the importance of proper functioning of the screening and crushing system and continuous monitoring for uninterrupted operation	To be competent, the user/individual on the job must be able to:  PC18. Ensure working and the standby unit e.g. grizzly's, grills, grate bars, screen, devices of crushers are in proper condition PC19. Ensure in case of absence of parallel stream the running worthiness of the available stream / section is restored by means of carrying out necessary rectification process PC20. Ensure monitoring of the working unit e.g. grizzly's, screens, grate bars, grizzly's etc. by visual inspection PC21. Ensure continuous monitoring of spillage of raw materials and take appropriate steps as required PC22. Ensure the conveyor belt is properly trained (arresting the shifting of the belt) PC23. Note anomaly if any and inform supervisor, coordinate for taking corrective measures
<b>Element</b>	<b>Knowledge and Understanding</b>
A. Organisational Context (Knowledge of the Company/ Organisation and its processes)	The user/individual on the job needs to know and understand:  KA1. Quality and damage checks to be done and importance of the same KA2. Risk and impact of not following defined procedures/work instructions KA3. Escalation matrix for reporting identified issues
B. Technical Knowledge	The user/individual on the job needs to know and understand:  KB1. Raw material handling system KB2. Various safety interlocking systems that exists in material handling system KB3. Importance of size fraction, moisture contents of raw materials for blast furnace operation KB4. Steps to be taken in case of power failure (re-starting the cutter on restoration of power system) KB5. Safety hazards associated with running conveyors, cutters, ball mills, grate bars, grizzly's etc.
<b>Skills (S) w.r.t. the scope</b>	
<b>Element</b>	<b>Skills</b>
A. Core Skills/ Generic Skills	<b>Writing Skills</b>
	The user/ individual on the job needs to know and understand how to:  SA1. Construct simple sentences and express ideas clearly through written communication SA2. Fill up appropriate technical forms, process charts, activity logs in required format of the company
	<b>Reading and Understanding Skills</b>
	The user/individual on the job needs to know and understand how to:





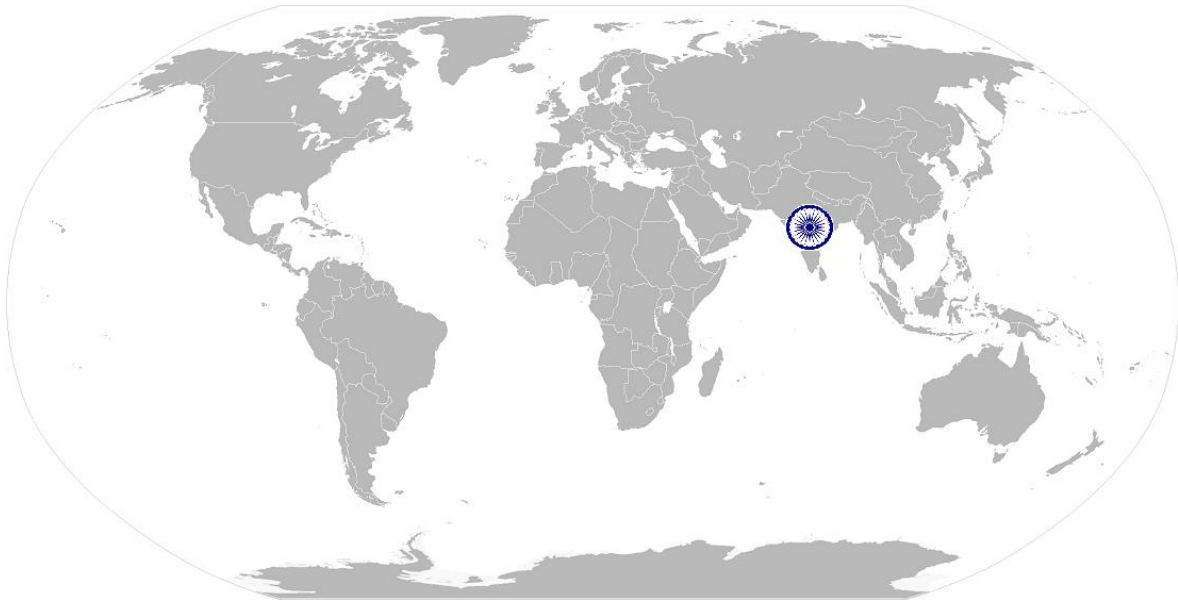
	SA3. Read and interpret engineering and machine drawings of screening and crushing system SA4. Read and understand manuals, health and safety instructions, memos, reports, job cards etc.
	<b>Oral Communication (Listening and Speaking skills)</b>
	The user/individual on the job needs to know and understand how to:  SA5. Express statements, opinions or information clearly so that others can hear and understand SA6. Respond appropriately to queries SA7. Communicate with supervisor SA8. Communicate with team members
<b>B. Professional Skills</b>	<b>Analytical Thinking &amp; Problem Solving</b>
	The user/individual on the job needs to know and understand how to:  SB1. Diagnose common problems in the units/sections based on visual inspection e.g.- misalignment or deviation of conveyor system, scratch marks/ cut marks/pilled off ply of the conveyor belt, hole in conveyor, misaligned grizzly shaft, grizzly disc etc. SB2. Suggest improvements(if any)for observed anomalies





## NOS Version Control

NOS Code	ISC/N0105		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and Steel	Drafted on	24/11/2014
Industry Sub-sector	Steel, Sponge Iron, Ferro Alloys, Re-Rollers, Refractory	Last reviewed on	25/03/2015
Occupation	Raw Material Handling	Next review date	25/03/2016





ISC/N0106: Carry out operation of screening and crushing unit

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# National Occupational Standards

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## Overview

This unit is about carrying out operation of screening and crushing system.



Unit Code	ISC/N0106
Unit Title (Task)	Carry out operation of screening and crushing unit
Description	This unit is about carrying out operation of screening and crushing system.
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>Understand the operation of screening and crushing system</li> <li>Plan and coordinate for smooth operation</li> <li>Carry out the operational activities</li> </ul>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
Understand the operation of screening and crushing system	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Understand the sequence of screening and crushing activities            PC2. Interpret the previous shift/day log book to check readiness of the operating stream            PC3. Coordinate with the interlinked departments (e.g. blast furnace, raw material handling, traffic etc.) as necessary to start the screening and crushing system            PC4. Seek clarification from supervisor in case of any doubt/deviation</p>
Plan and coordinate for smooth operation	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC5. Select position of feeder valve as per plan for feeding to blast furnace/wagon loading            PC6. Carry out visual inspection of the unit for starting the operation            PC7. Coordinate for loco and wagon placement (in case of wagon loading) and repeat the process as necessary during operation</p>
Carry out the operational activities	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC8. Start crusher from the respective work site control board            PC9. Interpret the voice communication clearly for starting the operation process            PC10. Ensure starting the raw material handling system            PC11. Ensure in case of wagon loading proper signal is being provided            PC12. Carry out periodical inspection of running units of screening and crushing system            PC13. Record the deviations/faults as detected through visual inspection and inform the supervisor            PC14. Coordinate with the concerned team/department for rectification/replacement as necessary to ensure uninterrupted operation            PC15. Maintain log book and record the spill over job, running condition of the unit and abnormalities if any for next shift</p>
<b>Element</b>	<b>Knowledge and Understanding</b>

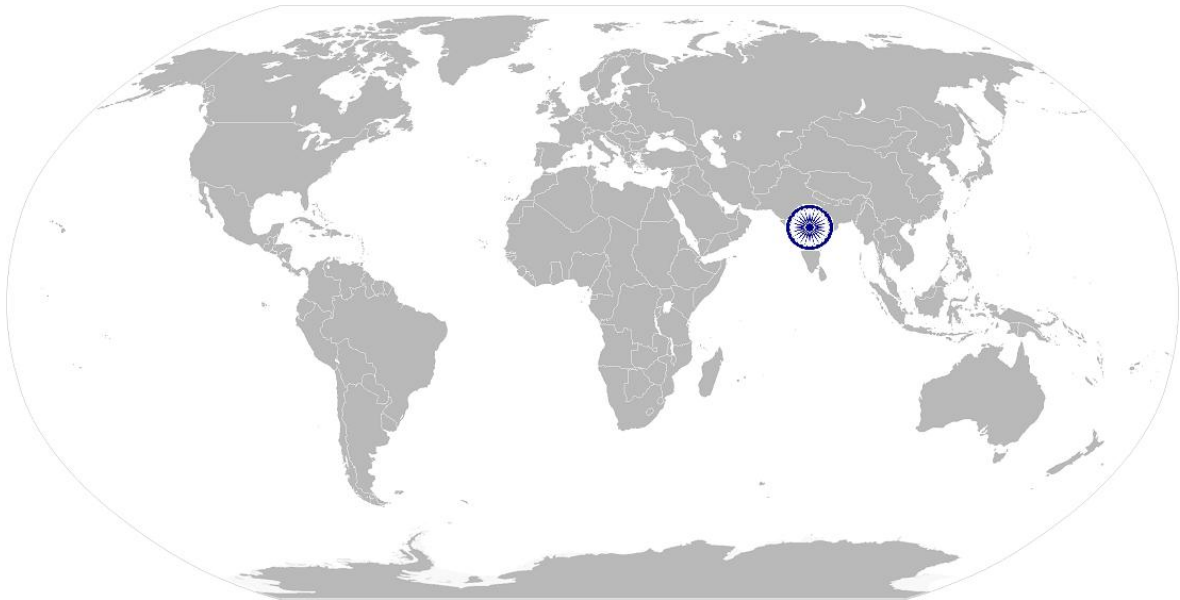


<p>A. Organisational Context (Knowledge of the Company/ Organisation and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. Quality and damage checks to be done and importance of the same KA2. Risk and impact of not following defined procedures/work instructions KA3. Escalation matrix for reporting identified issues</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Raw material handling system KB2. Various safety interlocking systems that exists in material handling system KB3. Importance of size fraction, moisture contents of raw materials for blast furnace operation KB4. Steps to be taken in case of power failure (re-starting the cutter on restoration of power system) KB5. Safety hazards associated with running conveyors, cutters, ball mills, grate bars, grizzly's etc.</p>
<p><b>Skills (S) w.r.t. the scope</b></p>	
<p><b>Element</b></p>	<p><b>Skills</b></p>
<p>A. Core Skills/ Generic Skills</p>	<p><b>Writing Skills</b></p> <p>The user/ individual on the job needs to know and understand how to:</p> <p>SA1. Construct simple sentences and express ideas clearly through written communication SA2. Fill up appropriate technical forms, process charts, activity logs in required format of the company</p> <p><b>Reading and Understanding Skills</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA3. Read and interpret engineering and machine drawings with respect to Screening and Crushing System SA4. Read and understand manuals, health and safety instructions, memos, reports, job cards etc.</p> <p><b>Oral Communication (Listening and Speaking skills)</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA5. Express statements, opinions or information clearly so that others can hear and understand SA6. Respond appropriately to queries SA7. Communicate with team members and supervisor</p>
<p>B. Professional Skills</p>	<p>Analytical Thinking &amp; Problem Solving</p>



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

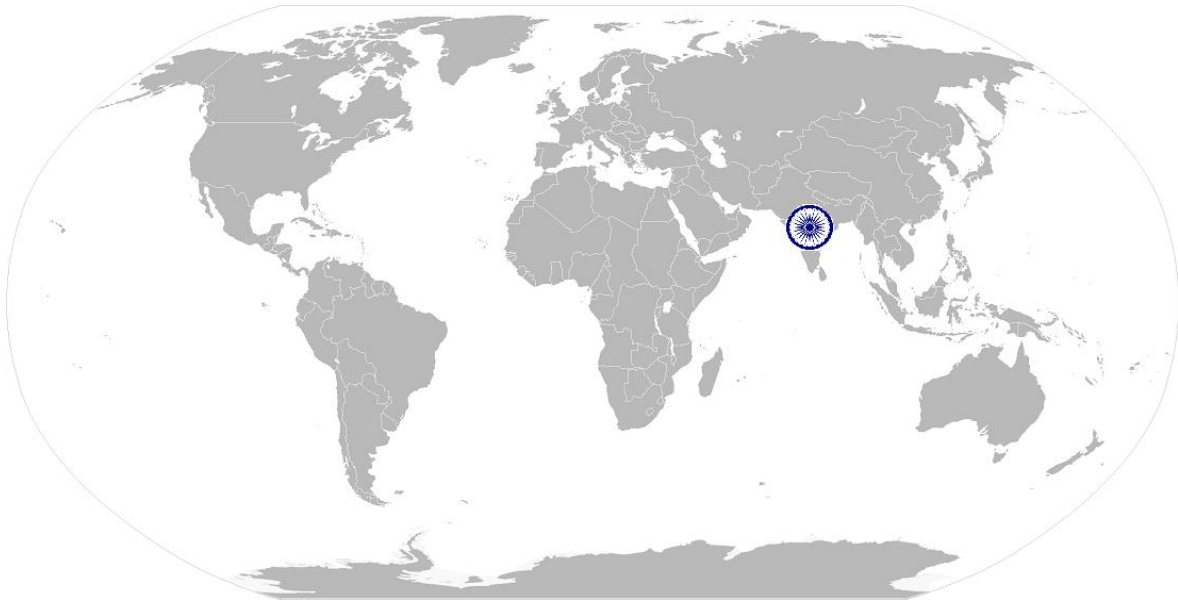
SB1. Diagnose common problems in the units/sections based on visual inspection e.g.- misalignment or deviation of conveyor system, scratch marks/ cut marks/pilled off ply of the conveyor belt, hole in conveyor, misaligned grizzly shaft, grizzly disc etc.  
SB2. Suggest improvements(if any)for observed anomalies





## NOS Version Control

NOS Code	ISC/N0106		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and Steel	Drafted on	08/09/2014
Industry Sub-sector	Steel, Sponge Iron, Ferro Alloys, Re-Rollers, Refractory	Last reviewed on	25/03/2015
Occupation	Raw Material Handling	Next review date	25/03/2016





ISC/N0107: Carry out basic maintenance activities of screening and crushing unit

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## Overview

This unit is about carrying basic routine and preventive maintenance activities of screening and crushing system.





Unit Code	ISC/N0107
Unit Title (Task)	Carry out basic maintenance activities of screening and crushing unit
Description	This unit is about carrying basic routine and preventive maintenance activities of screening and crushing system.
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>Plan the routine and preventive maintenance that need to be carried out for screening and crushing system</li> <li>Coordinate to carry out maintenance activities of screening and crushing system</li> </ul>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
Plan the routine and preventive maintenance that need to be carried out for screening and crushing system	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. Analyse the inspection data /report to identify the sections/parts/equipments pertaining to the screening and crushing system that need rectification/replacement            PC2. Plan for rectification/replacement of sections/parts/equipments of both the running and/or standby streams as a part of routine/preventive maintenance            PC3. Ensure that all maintenance activities are carried out without/minimum interruption of operation to maintain the planned production schedule            PC4. Seek help/clarification from supervisor in case of any doubt</p>
Coordinate to carry out maintenance activities of screening and crushing system	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC5. Ensure to spare the stream/parts/sections where maintenance activities are to be carried out            PC6. Communicate the maintenance team to start the activities            PC7. Communicate the co-workers on the stream/ parts/sections where the maintenance activities are carried out to prevent any untoward incidents            PC8. Record the maintenance data/activities in the log book and inform supervisor on completion of the maintenance job</p>
<b>Element</b>	<b>Knowledge and Understanding</b>
A. Organisational Context (Knowledge of the Company/ Organisation and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. Quality and damage checks to be done and importance of the same            KA2. Risk and impact of not following defined procedures/work instructions            KA3. Escalation matrix for reporting identified issues</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Knowledge of raw material handling system</p>

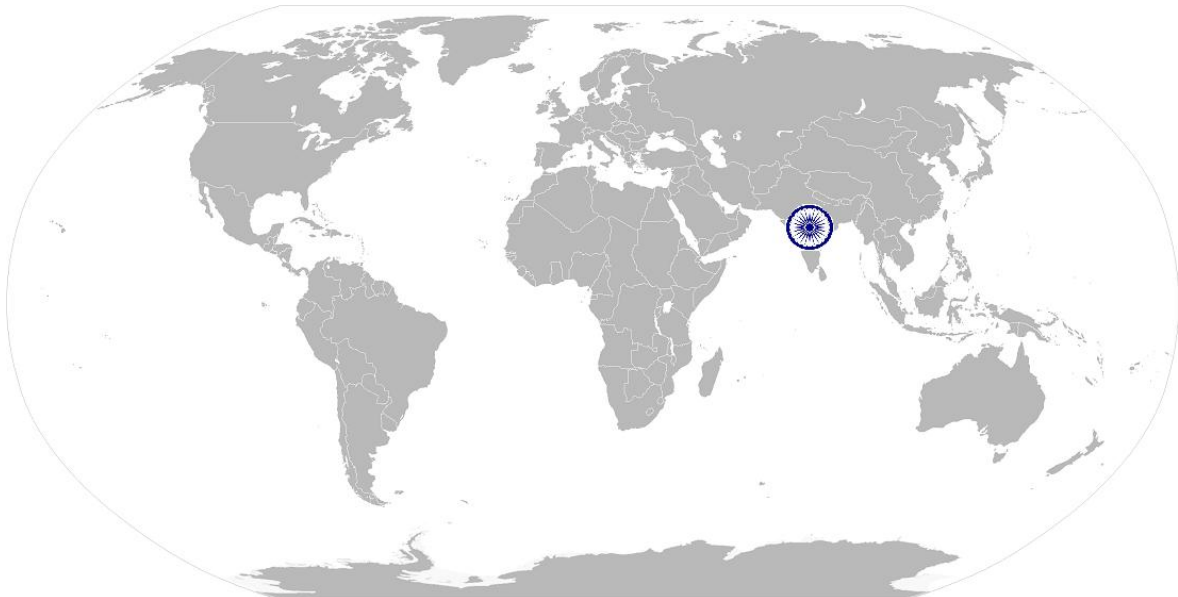


	<p>KB2. Knowledge of various safety interlocking systems that exists in material handling system</p> <p>KB3. Importance of size fraction, moisture contents of raw materials for blast furnace operation</p> <p>KB4. Steps to be taken in case of power failure (re-starting the cutter on restoration of power system)</p> <p>KB5. Safety hazards associated with running conveyors, cutters, ball mills, grate bars, grizzly's etc.</p>
<b>Skills (S) w.r.t. the scope</b>	
<b>Element</b>	<b>Skills</b>
A. Core Skills/ Generic Skills	<b>Writing Skills</b>
	The user/ individual on the job needs to know and understand how to:
	<p>SA1. Construct simple sentences and express ideas clearly through written communication</p> <p>SA2. Fill up appropriate technical forms, process charts, activity logs in required format of the company</p>
	<b>Reading and Understanding Skills</b>
The user/individual on the job needs to know and understand how to:	
<p>SA3. Read and interpret engineering and machine drawings with respect to Screening and Crushing System</p> <p>SA4. Read and understand manuals, health and safety instructions, memos, reports, job cards etc.</p>	
<b>Oral Communication (Listening and Speaking skills)</b>	
The user/individual on the job needs to know and understand how to:	
<p>SA5. Express statements, opinions or information clearly so that others can hear and understand</p> <p>SA6. Respond appropriately to queries</p> <p>SA7. Communicate with team members and supervisor</p>	
B. Professional Skills	<b>Analytical Thinking &amp; Problem Solving</b>
	The user/individual on the job needs to know and understand how to:
<p>SB1. Diagnose common problems in the units/sections based on visual inspection e.g.- misalignment or deviation of conveyor system, scratch marks/ cut marks/pilled off ply of the conveyor belt, hole in conveyor, misaligned grizzly shaft, grizzly disc etc.</p> <p>SB2. Suggest improvements(if any)for observed anomalies</p>	



## NOS Version Control

NOS Code	ISC/N0107		
Credits(NVEQF/NVQF/NSQF)	TBD	Version number	1.0
Industry	Iron and Steel	Drafted on	08/09/2014
Industry Sub-sector	Steel, Sponge Iron, Ferro Alloys, Re-Rollers, Refractory	Last reviewed on	25/03/2015
Occupation	Raw Material Handling	Next review date	25/03/2016





ISC/N0008: Use basic health and safety practices at the workplace

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# National Occupational Standards



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## Overview

This unit covers health, safety and security at the workplace. This includes procedures and practices that candidates need to follow to help maintain a healthy, safe and secure work environment.



Unit Code	ISC/N0008
Unit Title (Task)	Use basic health and safety practices at the work place
Description	<p>This OS unit is about knowledge and practices relating to health, safety and security that candidates need to use in the workplace. It covers responsibilities towards self, others, assets and the environment.</p> <p>It includes understanding of risks and hazards in the workplace, along with common techniques to minimize risk, deal with accidents, emergencies, etc.</p>
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>• Health and safety procedures</li> <li>• Fire safety procedures</li> <li>• Emergencies, rescue and first aid procedures</li> </ul>
Performance Criteria (PC) w.r.t. the Scope	
Element	Performance Criteria
Health and safety procedures	<p>The user/individual on the job should be able to:</p> <p>PC1. Use protective clothing/equipment for specific tasks and work conditions</p> <p>Protective clothing includes:</p> <ul style="list-style-type: none"> <li>• Leather or asbestos gloves</li> <li>• Flame proof aprons</li> <li>• Flame proof overalls buttoned to neck</li> <li>• Cuff less (without folds) trousers</li> <li>• Reinforced footwear</li> <li>• Helmets/hard hats</li> <li>• Cap and shoulder covers</li> <li>• Ear defenders/plugs</li> <li>• Safety boots</li> <li>• Knee pads</li> <li>• Particle masks</li> <li>• Glasses/gloves/visors</li> </ul> <p>Equipment includes:</p> <ul style="list-style-type: none"> <li>• Hand shields</li> <li>• Machine guards</li> <li>• Residual current devices</li> <li>• Shields</li> <li>• Dust sheets</li> <li>• Respirator</li> </ul> <p>PC2. State the name and location of people responsible for health and safety in the</p>

workplace

Various areas are listed below:

- On chemical containers
- Equipment
- Packages
- Inside buildings
- Open areas, public places etc.

PC3. State the names and location of documents that refer to health and safety in the workplace

PC4. Identify job-site hazardous work and state possible causes of risk or accident in the workplace

Hazards include:

- Working with electrical and thermal tools and equipment
- Sharp edged and heavy tools
- Heated metals
- Oxyfuel and gas cylinders
- Welding radiation
- Surfaces: sharp, slippery, uneven, chipped, broken, etc.
- Substances: chemicals, gas, oxy-fuel, fumes, dust, etc.
- Physical: working at heights, large and heavy objects and machines, sharp and piercing objects, tools and machines, intense light, load noise, obstructions in corridors, by doors, blind turns, noise, over stacked shelves and packages, etc.
- Electrical: power supply and points, loose and naked cables and wires, electrical machines and appliances, etc.

PC5. Carry out safe working practices while dealing with hazards to ensure the safety of self and others state methods of accident prevention in the work environment of the job role

Safe working practices include:

- Using protective clothing and equipment
- Putting up and reading safety signs
- Handle tools in the correct manner and store and maintain them properly
- Keep work area clear of clutter, spillage and unsafe object lying casually
- While working with electricity take all electrical precautions like insulated clothing, adequate equipment insulation, use of control equipment, dry work area, switch off the power supply when not required, etc.
- Safe lifting and carrying practices
- Use equipment that is working properly and is well maintained
- Take due measures for safety while working in confined places, trenches or at heights, etc. Including safety harness, fall arrestors etc.

Methods are:

- Training in health and safety procedures
- Using health and safety procedures
- Use of equipment and working practices (such as safe carrying procedures)
- Safety notices, advice



	<ul style="list-style-type: none"> <li>• Instruction from colleagues and supervisors</li> </ul> <p>PC6. State location of general health and safety equipment in the workplace PC7. Inspect for faults, set up and safely use steps and ladders in general use</p> <p>Faults :</p> <ul style="list-style-type: none"> <li>• Corrosion of metal components</li> <li>• Deterioration</li> <li>• Splits and cracks timber components</li> <li>• Imbalance</li> <li>• Loose rungs</li> <li>• Nuts or bolts, etc.</li> </ul> <p>Set up:</p> <ul style="list-style-type: none"> <li>• Firm/level base</li> <li>• Clip/lash down</li> <li>• Leaning at the correct angle, etc.</li> </ul> <p>PC8. Work safely in and around trenches, elevated places and confined areas PC9. Lift heavy objects safely using correct procedures PC10. Apply good housekeeping practices at all times. Good housekeeping practices:</p> <ul style="list-style-type: none"> <li>• Clean/tidy work areas</li> <li>• Removal/disposal of waste products</li> <li>• Protect surfaces</li> </ul> <p>PC11. Identify common hazard signs displayed in various areas PC12. Retrieve and/or point out documents that refer to health and safety in the workplace</p>
<p>Fire safety procedures</p>	<p>The user/individual on the job should be able to:</p> <p>PC13. Use the various appropriate fire extinguishers on different types of fires correctly.</p> <p>Fire extinguishers:</p> <ul style="list-style-type: none"> <li>• Sand</li> <li>• Water</li> <li>• Foam</li> <li>• Co2</li> <li>• Dry powder</li> </ul> <p>Fires:</p> <ul style="list-style-type: none"> <li>• Class A: Ordinary solid combustibles, e.g. wood, paper, cloth, plastic, charcoal etc.</li> <li>• Class B: Flammable liquids and gases, e.g. gasoline, propane, diesel fuel, tar, cooking oil and similar substances</li> <li>• Class C: Electrical equipment e.g. appliances, wiring, breaker panels etc. (these categories of fires become Class A, B, and D fires when the electrical equipment that initiated the fire is no longer receiving electricity)</li> <li>• Class D: Combustible metals such as magnesium, titanium, and sodium (these fires burn at extremely high temperatures and require special suppression agents)</li> </ul> <p>Causes of fires:</p>



	<ul style="list-style-type: none"> <li>• Heating of metal</li> <li>• Spontaneous ignition</li> <li>• Sparking,</li> <li>• Electrical heating</li> <li>• Loose fires (e.g. Smoking, welding, etc.)</li> <li>• Chemical fires, etc.</li> </ul> <p>PC14. Demonstrate rescue techniques applied during fire hazard            PC15. Demonstrate good housekeeping in order to prevent fire hazards            PC16. Demonstrate the correct use of a fire extinguisher</p>
<p>Emergencies, rescue and first-aid procedures</p>	<p>The user/individual on the job should be able to:</p> <p>PC17. Demonstrate how to free a person from electrocution            PC18. Administer appropriate first aid to victims as required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc.            PC19. Demonstrate basic techniques of bandaging            PC20. Respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments . few General health and safety equipment are mentioned below :</p> <ul style="list-style-type: none"> <li>• Fire extinguishers</li> <li>• First aid equipment</li> <li>• Safety instruments and clothing</li> <li>• Safety installations, e.g. Fire exits, exhaust fans etc.</li> </ul> <p>PC21. Perform and organize loss minimization or rescue activity during an accident in real or simulated environments            PC22. Administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases            PC23. Demonstrate the artificial respiration and the CPR Process            PC24. Participate in emergency procedures. Emergency procedures are:</p> <ul style="list-style-type: none"> <li>• Raising alarm</li> <li>• Safe/efficient evacuation</li> <li>• Correct means of escape</li> <li>• Correct assembly point</li> <li>• Roll call</li> <li>• Correct return to work</li> </ul> <p>PC25. Complete a written accident/incident report or dictate a report to another person, and send report to person responsible            Incident Report should capture:</p> <ul style="list-style-type: none"> <li>• Name</li> <li>• Date/time of incident</li> <li>• Date/time of report,</li> <li>• Location</li> <li>• Environment conditions</li> <li>• Persons involved</li> <li>• Sequence of events</li> <li>• Injuries sustained</li> <li>• Damage sustained</li> <li>• Actions taken</li> </ul>





	<ul style="list-style-type: none"> <li>• Witnesses</li> <li>• Supervisor/manager notified</li> </ul> <p>Documents:</p> <ul style="list-style-type: none"> <li>• Fire notices</li> <li>• Accident reports</li> <li>• Safety instructions for equipment and procedures</li> <li>• Company notices and documents</li> <li>• Legal documents (e.g. Government notices)</li> </ul> <p>Job titles:</p> <ul style="list-style-type: none"> <li>• Health and safety officer</li> <li>• First aid officer</li> <li>• Fire officer</li> </ul> <p>PC26. Demonstrate correct method to move injured people and others during an emergency</p>
<b>Element</b>	<b>Knowledge and Understanding</b>
<p>A. Organisational Context (Knowledge of the Company/ Organisation and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. State the names (and job titles if applicable), and describe where to find, all the people responsible for health and safety in a workplace</p> <p>KA2. State the names and location of documents that refer to health and safety in the workplace</p>
<p>B. Technical Knowledge</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB3. Meaning of “hazards” and “risks”</p> <p>KB4. Health and safety hazards commonly present in the work environment and related precautions</p> <p>KB5. Possible causes of risk, hazard or accident in the workplace and why risk and/or accidents are possible</p> <p>KB6. Activities and causes of risk and accident</p> <p>KB7. Methods of accident prevention</p> <p>KB8. Safe working practices when working with tools and machines</p> <p>KB9. Safe working practices while working at various hazardous sites</p> <p>KB10. Where to find all the general health and safety equipment in the workplace</p> <p>KB11. Various dangers associated with the use of electrical equipment</p> <p>KB12. Preventative and remedial actions to be taken in the case of exposure to toxic materials.</p> <ul style="list-style-type: none"> <li>• Exposure: ingested, contact with skin, inhaled</li> <li>• Preventative action: ventilation, masks, protective clothing/equipment</li> <li>• Remedial action: immediate first aid, report to supervisor</li> <li>• Materials: solvents, flux, lead</li> </ul> <p>KB13. Importance of using protective clothing/equipment while working</p> <p>KB14. Precautionary activities to prevent the fire accident</p> <p>Activities and causes:</p> <ul style="list-style-type: none"> <li>• Physical actions</li> <li>• Reading</li> </ul>



	<ul style="list-style-type: none"> <li>• Listening to and giving instructions</li> <li>• Inattention</li> <li>• Sickness and incapacity (e.g. Drunkenness)</li> <li>• Health hazards (e.g. Untreated injuries and contagious illness)</li> </ul> <p>KB15. Various causes of fire            KB16. Techniques of using the different fire extinguishers            KB17. Different methods of extinguishing fire            KB18. Rescue techniques applied during a fire hazard            KB19. Various types of safety signs and what they mean            KB20. Appropriate basic first aid treatment relevant to the condition e.g. Shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries            KB21. Content of written accident report            KB22. Potential injuries and ill health associated with incorrect manual handling            KB23. Safe lifting and carrying practices            KB24. Personal safety, health and dignity issues relating to the movement of a person by others            KB25. Potential impact to a person who is moved incorrectly</p>
<b>Skills (S) w.r.t. the scope</b>	
<b>Element</b>	<b>Skills</b>
<b>A. Core Skills/ Generic Skills</b>	<b>Reading and Writing Skills</b>
	The user/individual on the job needs to know and understand how to:  SA1. Read and comprehend basic content to read labels, charts, signages SA2. Read and comprehend basic English to read manuals of operations SA3. Read and write an accident/incident report in local language or English
	<b>Oral Communication (Listening and Speaking skills)</b>
	The user/individual on the job needs to know and understand how to:  SA4. Question co-workers appropriately in order to clarify instructions and other issues SA5. Give clear instructions to co-workers, subordinates others
<b>B. Professional Skills</b>	<b>Decision Making</b>
	The user/individual on the job needs to know and understand how to:  SA6. Make appropriate decisions pertaining to the concerned area of work with respect to intended work objective, span of authority, responsibility, laid down procedure and guidelines
<b>B. Professional Skills</b>	<b>Plan and Organize</b>
	The user/individual on the job needs to know and understand:  SB1. Plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity

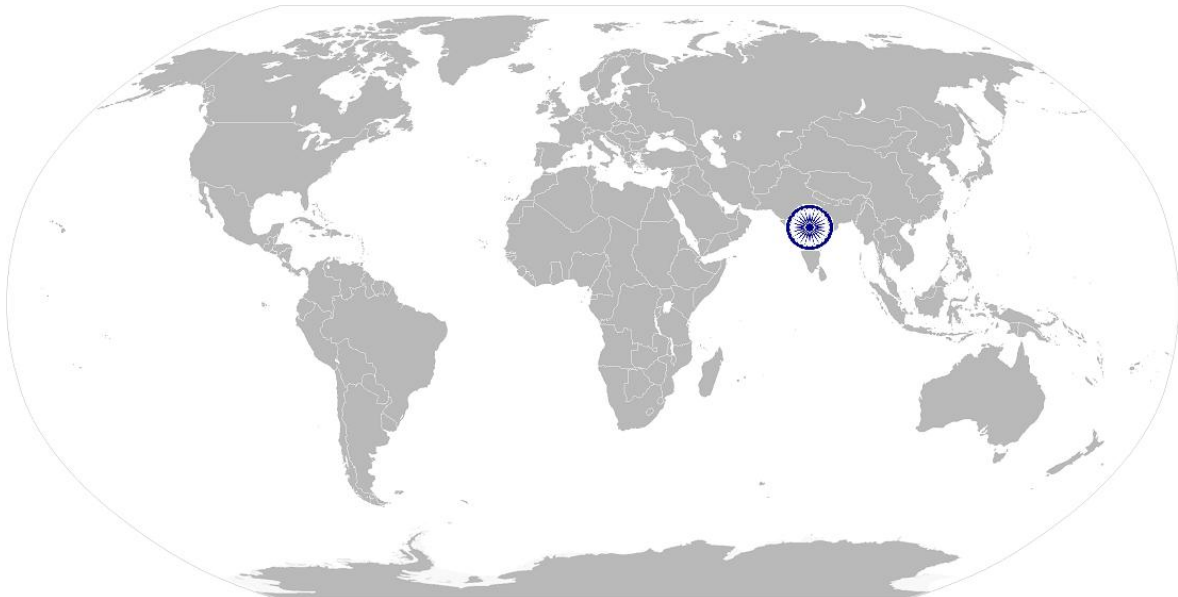


	<b>Working with others</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB2. Remain congenial while discussing and debating issues with co-workers            SB3. Follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice            SB4. Ask for, provide and receive required assistance where possible to ensure achievement of work related objectives            SB5. Thank co-workers for any assistance received            SB6. Offer appropriate respect based on mutuality and respect for fellow workmanship and authority</p>
	<b>Problem Solving</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB7. Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)            SB8. Identify immediate or temporary solutions to resolve delays            SB9. Identify sources of support that can be availed of for problem solving for various kind of problems            SB10. Seek appropriate assistance from other sources to resolve problems            SB11. Report problems that you cannot resolve to appropriate authority</p>
	<b>Analytical Thinking</b>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB12. Identify cause and effect relations in their area of work            SB13. Use cause and effect relations to anticipate potential problems and their solution</p>



## NOS Version Control

NOS Code	ISC/N0008		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and Steel	Drafted on	23/07/2014
Industry Sub-sector	All Departments	Last reviewed on	30/12/2014
Occupation	Raw Material Handling	Next review date	30/12/2015





# National Occupational Standards



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## **Overview**

This unit covers basic practices that improve effectiveness of working with others in an organisational set-up.



Unit Code	ISC/N0009
Unit Title (Task)	Work effectively with others
Description	This unit covers basic etiquette and competencies that a candidate is required to possess and demonstrate in their behaviour and interactions with others at the workplace.
Scope	This unit/task covers the following: <ul style="list-style-type: none"> <li>• Ensure appropriate communication with superiors, peers and others as applicable at work place</li> <li>• Demonstrate appropriate behaviour and etiquette at work place</li> </ul>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
Ensure appropriate communication with superiors, peers and others as applicable at work place	The user/individual on the job should be able to: PC1. Accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required PC2. Accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt PC3. Provide information to others clearly, at a pace and in a manner that helps them to understand
Demonstrate appropriate behaviour and etiquette at work place	The user/individual on the job should be able to: PC4. Display helpful behaviour by assisting others in performing tasks in a positive manner, where required and possible PC5. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks PC6. Display appropriate communication etiquette while working PC7. Display active listening skills while interacting with others at work PC8. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism PC9. Demonstrate responsible and disciplined behaviours at the workplace PC10. Escalate grievances and problems to
<b>Element</b>	<b>Knowledge and Understanding</b>
A. Organisational Context (Knowledge of the Company/ Organisation and its processes)	The user/individual on the job needs to know and understand: KA1. Legislation, standards, policies, and procedures followed in the company relevant to own employment and performance conditions KA2. Reporting structure, inter-dependent functions, lines and procedures in the work area KA3. Relevant people and their responsibilities within the work area KA4. Escalation matrix and procedures for reporting work and employment related



	issues
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. Various categories of people that one is required to communicate and co-ordinate with in the organization  KB2. Importance of effective communication in the workplace  KB3. Importance of teamwork in organizational and individual success  KB4. Various components of effective communication  KB5. Key elements of active listening  KB6. Value and importance of active listening and assertive communication  KB7. Barriers to effective communication  KB8. Importance of tone and pitch in effective communication  KB9. Importance of avoiding casual expletives and unpleasant terms while communicating professional circles  KB10. How poor communication practices can disturb people, environment and cause problems for the employee, the employer and the customer  KB11. Importance of ethics for professional success  KB12. Importance of discipline for professional success  KB13. What constitutes disciplined behaviour for a working professional  KB14. Common reasons for interpersonal conflict  KB15. Importance of developing effective working relationships for professional success  KB16. Expressing and addressing grievances appropriately and effectively  KB17. Importance and ways of managing interpersonal conflict effectively</p>
<b>Skills (S) w.r.t. the scope</b>	
<b>Element</b>	<b>Skills</b>
A. Core Skills/ Generic Skills	Reading and Writing Skills
	The user/individual on the job needs to know and understand how to:
	SA1. Read and comprehend basic content to read labels, charts, signage's SA2. Read and comprehend basic English to read manuals of operations SA3. Read and write an accident/incident report in local language or English
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to:
	SA4. Question co-workers appropriately in order to clarify instructions and other issues SA5. Provide clear instructions to co-workers, subordinates others
	Decision Making
	The user/individual on the job needs to know and understand how to:
	SA6. Make appropriate decisions pertaining to the concerned area of work with



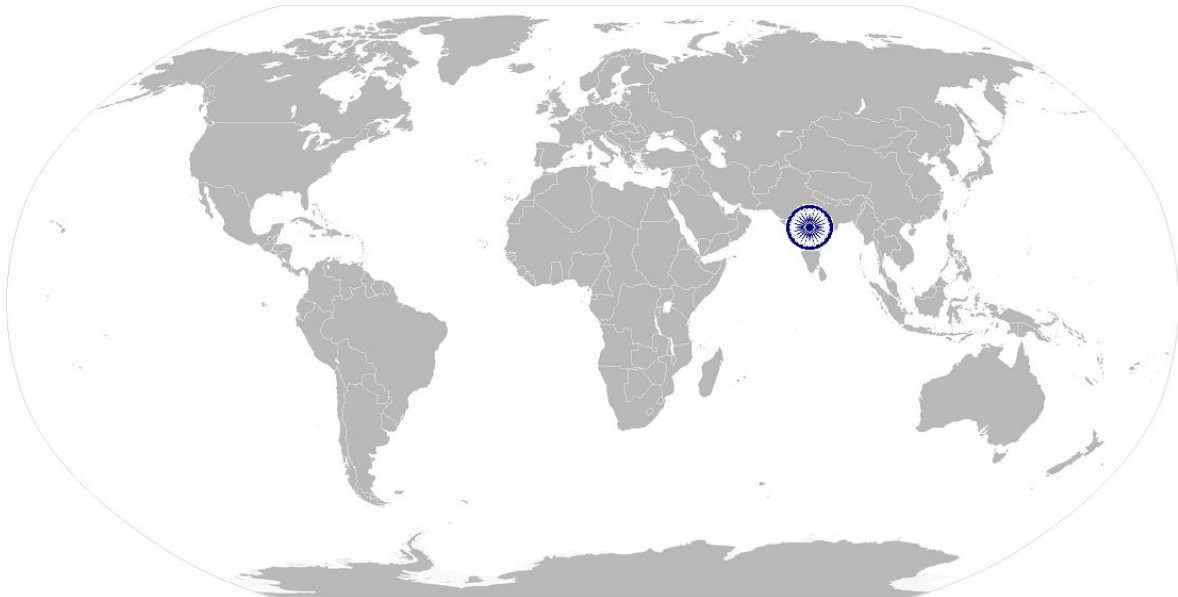
	respect to intended work objective, span of authority, responsibility, laid down procedure and guidelines
B. Professional Skills	<b>Plan and Organize</b>
	The user/individual on the job needs to know and understand:  SB1. Plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity
	<b>Working with others</b>
	The user/individual on the job needs to know and understand how to:  SB2. Remain congenial while discussing and debating issues with co-workers SB3. Follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice SB4. Ask for, provide and receive required assistance where possible to ensure achievement of work related objectives SB5. Thank co-workers for any assistance received SB6. Offer appropriate respect based on mutuality and respect for fellow workmanship and authority
	<b>Problem Solving</b>
	The user/individual on the job needs to know and understand how to:  SB7. Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s) SB8. Identify immediate or temporary solutions to resolve delays SB9. Identify sources of support that can be availed of for problem solving for various kind of problems SB10. Seek appropriate assistance from other sources to resolve problems SB11. Report problems that you cannot resolve to appropriate authority
<b>Analytical Thinking</b>	
The user/individual on the job needs to know and understand how to:  SB12. Identify cause and effect relations in their area of work SB13. Use cause and effect relations to anticipate potential problems and their solution	





## NOS Version Control

NOS Code	ISC/N0009		
Credits(NSQF)	TBD	Version number	1.0
Industry	Iron and Steel	Drafted on	23/07/2014
Industry Sub-sector	All Departments	Last reviewed on	30/12/2014
Occupation	Raw Material Handling	Next review date	30/12/2015





CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role: Screen & Crusher Operator

Qualification Pack: ISC/Q0102

Sector Skill Council: Indian Iron & Steel Sector Skill Council

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 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 60% 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.

NOSs	PCs	Total Marks 1000	Out Of	Marks Allocated	
				Theory	Practical
ISC/N0105: Carry out inspection and monitor the screening and crushing unit	PC1. Collect and interpret information from previous day/shift logbook	400	10	5	5
	PC2. Interpret the log book to understand the readiness of the crusher/ball mill, screens, grate bars, grizzly's, sheave etc.		15	5	10
	PC3. Plan to execute the assigned job		20	5	15
	PC4. Seek clarification from supervisor in case of any doubt		15	5	10
	PC5. Ensure availability of the checklist for regular inspection		10	5	5
	PC6. Inspect conveyor galleries for cleanliness		20	5	15



PC7. Inspect physical health of belts conveyor for scratch, cut, hole, pilled-off ply and its training for proper running. For chain conveyor inspect the physical condition of its tray and links	20	5	15
PC8. Inspect rollers (bolts, troughing and return), roller stands, lagging of H.E. & T.E. drums, physical condition of T.E. drum stand, structure and tension screws	20	5	15
PC9. Inspect gravity take-up pulley wherever required	20	5	15
PC10. Inspect crusher teeth, segment, roll. Shaft brush and crusher gap	20	5	15
PC11. Inspect ball mill wherever necessary	20	5	15
PC12. Inspect grate bars, grills, grizzly rolls, discs, gear trains and oil pumps etc.	20	5	15
PC13. Inspect the screens/sheave, vibration motors, "V" belts etc.	15	5	10
PC14. Inspect all relevant equipment as well as safety interlocking's, pull chords, heat sensors, speed pick-up relays etc. wherever applicable	20	5	15
PC15. Inspect pollution control/dust catching systems for their control level and efficiency	15	5	10
PC16. Ensure appropriate display of placards for units under shut-down and maintenance	15	5	10
PC17. Escalate deviations or abnormalities to supervisor	15	5	10
PC18. Ensure working and the standby unit e.g. grizzly's, grills, grate bars, screen, devices of crushers are in proper condition	15	5	10
PC19. Ensure in case of absence of parallel stream the running worthiness of the available stream / section is restored by means of carrying out necessary rectification process	15	5	10



	PC20. Ensure monitoring of the working unit e.g. grizzly's, screens, grate bars, grizzly's etc. by visual inspection		20	5	15
	PC21. Ensure continuous monitoring of spillage of raw materials and take appropriate steps as required		20	5	15
	PC22. Ensure the conveyor belt is properly trained (to arrest belt shifting)		20	5	15
	PC23. Note anomaly if any and inform supervisor, coordinate for taking corrective measures		20	5	15
		<b>Total</b>	<b>400</b>	<b>115</b>	<b>285</b>
ISC/N0106: Carry out operation of screening and crushing unit	PC1. Understand the sequence of screening and crushing activities	250	20	5	15
	PC2. Interpret the previous shift/day log book to check readiness of the operating stream		20	5	15
	PC3. Coordinate with the interlinked departments (e.g. blast furnace, raw material handling, traffic etc.) as necessary to start the screening and crushing system		20	5	15
	PC4. Seek clarification from supervisor in case of any doubt/deviation		15	5	10
	PC5. Select position of feeder valve as per plan for feeding to blast furnace/wagon loading		20	5	15
	PC6. Carry out visual inspection of the unit for starting the operation		15	0	15
	PC7. Coordinate for loco and wagon placement (in case of wagon loading) and repeat the process as necessary during operation		15	0	15
	PC8. Start crusher from the respective work site control board		15	0	15
	PC9. Interpret the voice communication clearly for starting the operation process		20	5	15
	PC10. Ensure starting the raw material handling system		15	0	15
	PC11. Ensure in case of wagon loading proper signal is being provided		20	5	15



	PC12. Carry out periodical inspection of running units of screening and crushing system		20	5	15
	PC13. Record the deviations/faults as detected through visual inspection and inform the supervisor		15	5	10
	PC14. Coordinate with the concerned team/department for rectification/replacement as necessary to ensure uninterrupted operation		10	5	5
	PC15. Maintain log book and record the spill over job, running condition of the unit and abnormalities if any for next shift		10	5	5
		<b>Total</b>	<b>250</b>	<b>55</b>	<b>195</b>
ISC/N0107: Carry out basic maintenance activities of screening and crushing unit	PC1. Analyse the inspection data /report to identify the sections/parts/equipments pertaining to the screening and crushing system that need rectification/replacement	100	15	5	10
	PC2. Plan for rectification/replacement of sections/parts/equipments of both the running and/or standby streams as a part of routine/preventive maintenance		15	5	10
	PC3. Ensure that all maintenance activities are carried out without/minimum interruption of operation to maintain the planned production schedule		15	5	10
	PC4. Seek help/clarification from supervisor in case of any doubt		10	5	5
	PC5. Ensure to spare the stream/parts/sections where maintenance activities are to be carried out		15	5	10
	PC6. Communicate the maintenance team to start the activities		10	5	5
	PC7. Communicate the co-workers on the stream/ parts/sections where the maintenance activities are carried out to prevent any untoward incidents		10	5	5



	PC8. Record the maintenance data/activities in the log book and inform supervisor on completion of the maintenance job		10	5	5
		Total	100	40	60
ISC/N0008: Use basic health and safety practices at the workplace	PC1. Use protective clothing/equipment for specific tasks and work conditions	150	10	5	5
	PC2. State the name and location of people responsible for health and safety in the workplace		5	0	5
	PC3. State the names and location of documents that refer to health and safety in the workplace		0	0	0
	PC4. Identify job-site hazardous work and state possible causes of risk or accident in the workplace		10	5	5
	PC5. Carry out safe working practices while dealing with hazards to ensure the safety of self and others state methods of accident prevention in the work environment of the job role		10	5	5
	PC6. State location of general health and safety equipment in the workplace		5	0	5
	PC7. Inspect for faults, set up and safely use steps and ladders in general use		5	0	5
	PC8. Work safely in and around trenches, elevated places and confined areas		5	0	5
	PC9. Lift heavy objects safely using correct procedures		5	0	5
	PC10. Apply good housekeeping practices at all times		0	0	0
	PC11. Identify common hazard signs displayed in various areas		5	5	0
	PC12. Retrieve and/or point out documents that refer to health and safety in the workplace		5	0	5
	PC13. Use the various appropriate fire extinguishers on different types of fires correctly		10	5	5
	PC14. Demonstrate rescue techniques applied during fire hazard		10	5	5



	PC15. Demonstrate good housekeeping in order to prevent fire hazards		0	0	0
	PC16. Demonstrate the correct use of a fire extinguisher		5	0	5
	PC17. Demonstrate how to free a person from electrocution		5	0	5
	PC18. Administer appropriate first aid to victims as required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc.		10	5	5
	PC19. Demonstrate basic techniques of bandaging		5	0	5
	PC20. Respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments		10	5	5
	PC21. Perform and organize loss minimization or rescue activity during an accident in real or simulated environments		5	0	5
	PC22. Administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases		5	0	5
	PC23. Demonstrate the artificial respiration and the CPR Process		5	0	5
	PC24. Participate in emergency procedures		5	0	5
	PC25. Complete a written accident/incident report or dictate a report to another person, and send report to person responsible		10	5	5
	PC26. Demonstrate correct method to move injured people and others during an emergency		0	0	0
		<b>Total</b>	<b>150</b>	<b>45</b>	<b>105</b>
ISC/N0009: Work effectively with others	PC1. Accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required	<b>100</b>	<b>10</b>	<b>5</b>	<b>5</b>



PC2. Accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt	10	5	5
PC3. Provide information to others clearly, at a pace and in a manner that helps them to understand	10	0	10
PC4. Display helpful behaviour by assisting others in performing tasks in a positive manner, where required and possible	10	5	5
PC5. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks	10	5	5
PC6. Display appropriate communication etiquette while working	10	0	10
PC7. Display active listening skills while interacting with others at work	10	0	10
PC8. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism	10	5	5
PC9. Demonstrate responsible and disciplined behaviours at the workplace	15	5	10
PC10. Escalate grievances and problems to supervisor	5	0	5
<b>Total</b>	<b>100</b>	<b>30</b>	<b>70</b>