

Qualification Pack



Screen & Crusher Operator

QP Code: IES/ISC/Q0102

Version: 1.0

NSQF Level: 3

Infrastructure Equipment Skill Council || Infrastructure Equipment Skill Council, Avik Royale-First Floor
(Next of Vijaya Bank), No.6, 50 feet Main Road, Avalahalli Extension, Girinagar
Bengaluru 560026

Qualification Pack

Borrowed Qualification Pack (QP) Parameters

Originating SSC	Iron & Steel
Borrowing SSC	Infrastructure Equipment
Borrowing Request Validity	01/07/2018 to 31/03/2020
Assessment and Certification to be conducted by	Infrastructure Equipment
Certification Logos to be included	Infrastructure Equipment

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IES/ISC/Q0102: Screen & Crusher Operator

Brief Job Description

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, grizzlies 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.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [ISC/N0008: Use basic health and safety practices at the workplace](#)
2. [ISC/N0009: Work effectively with others](#)
3. [ISC/N0105: Carry out inspection and monitor the screening and crushing unit](#)
4. [ISC/N0106: Carry out operation of screening and crushing unit](#)
5. [ISC/N0107: Carry out basic maintenance activities of screening and crushing unit](#)

Qualification Pack (QP) Parameters

Sector	Infrastructure Equipment
Sub-Sector	
Occupation	Raw Material Handling
Country	India
NSQF Level	3
Aligned to NCO/ISCO/ISIC Code	NCO-2004/NIL

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Minimum Educational Qualification & Experience	10th Class with 0-6 Months of experience Experience in a similar function under an experienced and qualified Supervisor OR 10th Class with 5-10 Years of experience In lieu of minimum qualification the incumbent should have 5 - 6 years of experience as helper to supervisor
Minimum Level of Education for Training in School	8th Class
Pre-Requisite License or Training	Induction training for material handling at steel plant 6 months on job training (mandatory) Job specific safety training Awareness program for pollution control
Minimum Job Entry Age	18 Years
Last Reviewed On	25/03/2015
Next Review Date	31/03/2020
NSQC Approval Date	20/07/2015
Version	1.0

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

Description

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. It includes understanding of risks and hazards in the workplace, along with common techniques to minimize risk, deal with accidents, emergencies, etc

Scope

This unit/task covers the following:

- Health and safety procedures
- Fire safety procedures
- Emergencies, rescue and first aid procedures
- Prepare the fabrication/ machining equipment
- Identify tools and moulds required for fabrication
- Prepare material required during fabrication of components
- Ensuring housekeeping and safety on the shop-floor

Elements and Performance Criteria

Health and safety

To be competent, the user/individual on the job must be able to:

PC1. Use protective clothing/equipment for specific tasks and work conditions
Protective clothing includes: Leather or asbestos gloves Flame proof aprons Flame proof overalls buttoned to neck Cuff less (without folds) trousers Reinforced footwear Helmets/hard hats Cap and shoulder covers Ear defenders/plugs Safety boots Knee pads Particle masks Glasses/gloves/visors
Equipment includes: Hand shields Machine guards Residual current devices Shields Dust sheets Respirator

Health and safety procedures

To be competent, the user/individual on the job must be able to:

PC2. State the name and location of people responsible for health and safety in the workplace
Various areas are listed below: On chemical containers Equipment Packages Inside buildings Open areas and public spaces, 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, tolls 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.

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- 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 Instruction from colleagues and supervisors
- 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 Faults : Corrosion of metal components Deterioration Splits and cracks timber components Imbalance Loose rungs Nuts or bolts, etc. Set up: Firm/level base Clip/lash down Leaning at the correct angle, etc.
- 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: Clean/tidy work areas Removal/disposal of waste products Protect surfaces
- 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

Fire safety procedures

To be competent, the user/individual on the job must be able to:

- PC13.** Use the various appropriate fire extinguishers on different types of fires correctly. Fire extinguishers: Sand Water Foam Co2 Dry powder Fires: Class A: Ordinary solid combustibles, e.g. wood, paper, cloth, plastic, charcoal etc. Class B: Flammable liquids and gases, e.g. gasoline, propane, diesel fuel, tar, cooking oil and similar substances 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) Class D: Combustible metals such as magnesium, titanium, and sodium (these fires burn at extremely high temperatures and require special suppression agents) Causes of fires: Heating of metal Spontaneous ignition Sparking, Electrical heating Loose fires (e.g. Smoking, welding, etc.) Chemical fires, etc.
- 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

Emergencies, rescue and first-aid procedures

To be competent, the user/individual on the job must be able to:

- 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

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- 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 :
Fire extinguishers First aid equipment Safety instruments and clothing Safety installations, e.g. Fire exits, exhaust fans etc.
- 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: Raising alarm
Safe/efficient evacuation Correct means of escape Correct assembly point Roll call Correct return to work
- PC25.** Complete a written accident/incident report or dictate a report to another person, and send report to person responsible Incident Report should capture: Name Date/time of incident Date/time of report, Location Environment conditions Persons involved Sequence of events Injuries sustained Damage sustained Actions taken Witnesses Supervisor/manager notified Documents: Fire notices Accident reports Safety instructions for equipment and procedures Company notices and documents Legal documents (e.g. Government notices) Job titles: ISC/N0008: Use basic health and safety practices at the workplace Health and safety officer First aid officer Fire officer
- PC26.** Demonstrate correct method to move injured people and others during an emergency

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** State the names (and job titles if applicable), and describe where to find, all the people responsible for health and safety in a workplace
- KU2.** State the names and location of documents that refer to health and safety in the workplace
- KU3.** Meaning of hazards and risks
- KU4.** Health and safety hazards commonly present in the work environment and related precautions
- KU5.** Possible causes of risk, hazard or accident in the workplace and why risk and/or accidents are possible
- KU6.** Activities and causes of risk and accident
- KU7.** Methods of accident prevention
- KU8.** Safe working practices when working with tools and machines
- KU9.** Safe working practices while working at various hazardous sites
- KU10.** Where to find all the general health and safety equipment in the workplace
- KU11.** Various dangers associated with the use of electrical equipment
- KU12.** Preventative and remedial actions to be taken in the case of exposure to toxic materials.
Exposure: ingested, contact with skin, inhaled Preventative action: ventilation, masks, protective clothing/equipment Remedial action: immediate first aid, report to supervisor
Materials: solvents, flux, lead
- KU13.** Importance of using protective clothing/equipment while working

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- KU14.** Precautionary activities to prevent the fire accident Activities and causes: Physical actions Reading Listening to and giving instructions Inattention Sickness and incapacity (e.g. Drunkenness) Health hazards (e.g. Untreated injuries and contagious illness)
- KU15.** Various causes of fire
- KU16.** Techniques of using the different fire extinguishers
- KU17.** Different methods of extinguishing fire
- KU18.** Rescue techniques applied during a fire hazard
- KU19.** Various types of safety signs and what they mean
- KU20.** Appropriate basic first aid treatment relevant to the condition e.g. Shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries
- KU21.** Content of written accident report
- KU22.** Potential injuries and ill health associated with incorrect manual handling
- KU23.** Safe lifting and carrying practices
- KU24.** Personal safety, health and dignity issues relating to the movement of a person by others
- KU25.** Potential impact to a person who is moved incorrectly

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** Read and comprehend basic content to read labels, charts, signages
- GS2.** Read and comprehend basic English to read manuals of operations
- GS3.** Read and write an accident/incident report in local language or English
- GS4.** Question co-workers appropriately in order to clarify instructions and other issues
- GS5.** Give clear instructions to co-workers, subordinates others
- GS6.** 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
- GS7.** Plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity
- GS8.** Remain congenial while discussing and debating issues with co-workers
- GS9.** Follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice
- GS10.** Ask for, provide and receive required assistance where possible to ensure achievement of work related objectives
- GS11.** Thank co-workers for any assistance received
- GS12.** Offer appropriate respect based on mutuality and respect for fellow workmanship and authority
- GS13.** Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
- GS14.** Identify immediate or temporary solutions to resolve delays
- GS15.** Identify sources of support that can be availed of for problem solving for various kind of problems
- GS16.** Report problems that you cannot resolve to appropriate authority

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GS17. Identify cause and effect relations in their area of work

GS18. Use cause and effect relations to anticipate potential problems and their solution

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Health and safety</i>	5	5	-	-
PC1. Use protective clothing/equipment for specific tasks and work conditions Protective clothing includes: Leather or asbestos gloves Flame proof aprons Flame proof overalls buttoned to neck Cuff less (without folds) trousers Reinforced footwear Helmets/hard hats Cap and shoulder covers Ear defenders/plugs Safety boots Knee pads Particle masks Glasses/gloves/visors Equipment includes: Hand shields Machine guards Residual current devices Shields Dust sheets Respirator	5	5	-	-
<i>Health and safety procedures</i>	15	40	-	-
PC2. State the name and location of people responsible for health and safety in the workplace Various areas are listed below: On chemical containers Equipment Packages Inside buildings Open areas and public spaces, etc.	-	4	-	-
PC3. State the names and location of documents that refer to health and safety in the workplace	-	1	-	-
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, tolls 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.	5	5	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<p>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 Instruction from colleagues and supervisors</p>	5	5	-	-
<p>PC6. State location of general health and safety equipment in the workplace</p>	-	5	-	-
<p>PC7. Inspect for faults, set up and safely use steps and ladders in general use Faults : Corrosion of metal components Deterioration Splits and cracks timber components Imbalance Loose rungs Nuts or bolts, etc. Set up: Firm/level base Clip/lash down Leaning at the correct angle, etc.</p>	-	5	-	-
<p>PC8. Work safely in and around trenches, elevated places and confined areas</p>	-	4	-	-
<p>PC9. Lift heavy objects safely using correct procedures</p>	-	4	-	-
<p>PC10. Apply good housekeeping practices at all times. Good housekeeping practices: Clean/tidy work areas Removal/disposal of waste products Protect surfaces</p>	-	1	-	-
<p>PC11. Identify common hazard signs displayed in various areas</p>	5	1	-	-
<p>PC12. Retrieve and/or point out documents that refer to health and safety in the workplace</p>	-	5	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Fire safety procedures</i>	10	15	-	-
PC13. Use the various appropriate fire extinguishers on different types of fires correctly. Fire extinguishers: Sand Water Foam Co2 Dry powder Fires: Class A: Ordinary solid combustibles, e.g. wood, paper, cloth, plastic, charcoal etc. Class B: Flammable liquids and gases, e.g. gasoline, propane, diesel fuel, tar, cooking oil and similar substances 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) Class D: Combustible metals such as magnesium, titanium, and sodium (these fires burn at extremely high temperatures and require special suppression agents) Causes of fires: Heating of metal Spontaneous ignition Sparking, Electrical heating Loose fires (e.g. Smoking, welding, etc.) Chemical fires, etc.	5	5	-	-
PC14. Demonstrate rescue techniques applied during fire hazard	5	5	-	-
PC15. Demonstrate good housekeeping in order to prevent fire hazards	-	1	-	-
PC16. Demonstrate the correct use of a fire extinguisher	-	4	-	-
<i>Emergencies, rescue and first-aid procedures</i>	15	45	-	-
PC17. Demonstrate how to free a person from electrocution	-	5	-	-
PC18. Administer appropriate first aid to victims as required e.g. in case of bleeding, burns, choking, electric shock, poisoning etc.	5	5	-	-
PC19. Demonstrate basic techniques of bandaging	-	5	-	-
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 : Fire extinguishers First aid equipment Safety instruments and clothing Safety installations, e.g. Fire exits, exhaust fans etc.	5	5	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC21. Perform and organize loss minimization or rescue activity during an accident in real or simulated environments	-	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	-	-
PC23. Demonstrate the artificial respiration and the CPR Process	-	5	-	-
PC24. Participate in emergency procedures. Emergency procedures are: Raising alarm Safe/efficient evacuation Correct means of escape Correct assembly point Roll call Correct return to work	-	4	-	-
PC25. Complete a written accident/incident report or dictate a report to another person, and send report to person responsible Incident Report should capture: Name Date/time of incident Date/time of report, Location Environment conditions Persons involved Sequence of events Injuries sustained Damage sustained Actions taken Witnesses Supervisor/manager notified Documents: Fire notices Accident reports Safety instructions for equipment and procedures Company notices and documents Legal documents (e.g. Government notices) Job titles: ISC/N0008: Use basic health and safety practices at the workplace Health and safety officer First aid officer Fire officer	5	5	-	-
PC26. Demonstrate correct method to move injured people and others during an emergency	-	1	-	-
NOS Total	45	105	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	ISC/N0008
NOS Name	Use basic health and safety practices at the workplace
Sector	Iron and Steel
Sub-Sector	Steel, Sponge Iron, Ferro Alloys, Re-Rollers, Refractory
Occupation	Mechanical Maintenance
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	25/03/2015
Next Review Date	01/04/2017
NSQC Clearance Date	18/06/2014

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ISC/N0009: 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:

- Ensure appropriate communication with superiors, peers and others as applicable at work place
- Demonstrate appropriate behaviour and etiquette at work place

Elements and Performance Criteria

Ensure appropriate communication with superiors, peers and others as applicable at work place

To be competent, the user/individual on the job must 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

To be competent, the user/individual on the job must 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

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** Legislation, standards, policies, and procedures followed in the company relevant to own employment and performance conditions
- KU2.** Reporting structure, inter-dependent functions, lines and procedures in the work area
- KU3.** Relevant people and their responsibilities within the work area
- KU4.** Escalation matrix and procedures for reporting work and employment related issues

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- KU5.** Various categories of people that one is required to communicate and co ordinate with in the organization
- KU6.** Importance of effective communication in the workplace
- KU7.** Importance of teamwork in organizational and individual success
- KU8.** Various components of effective communication
- KU9.** Key elements of active listening
- KU10.** Value and importance of active listening and assertive communication
- KU11.** Barriers to effective communication
- KU12.** Importance of tone and pitch in effective communication
- KU13.** Importance of avoiding casual expletives and unpleasant terms while communicating professional circles
- KU14.** How poor communication practices can disturb people, environment and cause problems for the employee, the employer and the customer
- KU15.** Importance of ethics for professional success
- KU16.** Importance of discipline for professional success
- KU17.** What constitutes disciplined behaviour for a working professional
- KU18.** Common reasons for interpersonal conflict
- KU19.** Importance of developing effective working relationships for professional success
- KU20.** Expressing and addressing grievances appropriately and effectively
- KU21.** Importance and ways of managing interpersonal conflict effectively

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** Read and comprehend basic content to read labels, charts, signages
- GS2.** Read and comprehend basic English to read manuals of operations
- GS3.** Read and write an accident/incident report in local language or English
- GS4.** Question co-workers appropriately in order to clarify instructions and other issues
- GS5.** Provide clear instructions to co-workers, subordinates others
- GS6.** Make appropriate decisions pertaining to the concerned area of work with respect to intended work objective, span of authority, responsibility, laid down
- GS7.** Plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity
- GS8.** Remain congenial while discussing and debating issues with co-workers
- GS9.** Follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice
- GS10.** Ask for, provide and receive required assistance where possible to ensure achievement of work related objectives
- GS11.** Thank co-workers for any assistance received
- GS12.** Offer appropriate respect based on mutuality and respect for fellow workmanship and authority

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- GS13.** Think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)
- GS14.** Identify immediate or temporary solutions to resolve delays
- GS15.** Identify sources of support that can be availed of for problem solving for various kind of problems
- GS16.** Identify sources of support that can be availed of for problem solving for various kind of problems
- GS17.** Report problems that you cannot resolve to appropriate authority
- GS18.** Identify cause and effect relations in their area of work
- GS19.** Use cause and effect relations to anticipate potential problems and their solution

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Ensure appropriate communication with superiors, peers and others as applicable at work place</i>	10	20	-	-
PC1. Accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required	5	5	-	-
PC2. Accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt	5	5	-	-
PC3. Provide information to others clearly, at a pace and in a manner that helps them to understand	-	10	-	-
<i>Demonstrate appropriate behaviour and etiquette at work place</i>	20	50	-	-
PC4. Display helpful behaviour by assisting others in performing tasks in a positive manner, where required and possible	5	5	-	-
PC5. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks	5	5	-	-
PC6. Display appropriate communication etiquette while working	-	10	-	-
PC7. Display active listening skills while interacting with others at work	-	10	-	-
PC8. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism	5	5	-	-
PC9. Demonstrate responsible and disciplined behaviours at the workplace	5	10	-	-
PC10. Escalate grievances and problems to	-	5	-	-
NOS Total	30	70	-	-

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National Occupational Standards (NOS) Parameters

NOS Code	ISC/N0009
NOS Name	Work effectively with others
Sector	Iron and Steel
Sub-Sector	Steel, Sponge Iron, Ferro Alloys, Re-Rollers, Refractory
Occupation	Mechanical Maintenance
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	30/12/2014
Next Review Date	01/04/2017
NSQC Clearance Date	18/06/2015

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ISC/N0105: 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.

Elements and Performance Criteria

Understand the assigned job in accordance with prior planning

To be competent, the user/individual on the job must be able to:

- 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, sheave etc.
- PC3.** Plan to execute the assigned job
- PC4.** Seek clarification from supervisor in case of any doubt

Carry out the routine inspection of screening and crushing unit

To be competent, the user/individual on the job must be able to:

- 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, pilled-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. & 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 interlockings, 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

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

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- PC20.** Ensure monitoring of the working unit e.g. grizzly's, screens, grate bars, grizzlys 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

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** quality and damage checks to be done and importance of the same
- KU2.** risk and impact of not following defined procedures/work instructions
- KU3.** escalation matrix for reporting identified issues
- KU4.** raw material handling system
- KU5.** various safety interlocking systems that exists in material handling system
- KU6.** importance of size fraction, moisture contents of raw materials for blast furnace operation
- KU7.** steps to be taken in case of power failure (re-starting the cutter on restoration of power system)
- KU8.** safety hazards associated with running conveyors, cutters, ball mills, grate bars, grizzly's etc.

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** construct simple sentences and express ideas clearly through written communication
- GS2.** fill up appropriate technical forms, process charts, activity logs in required format of the company
- GS3.** read and interpret engineering and machine drawings of screening and crushing system
- GS4.** read and understand manuals, health and safety instructions, memos, reports, job cards, etc.
- GS5.** express statements, opinions or information clearly so that others can hear and understand
- GS6.** respond appropriately to any queries
- GS7.** communicate with supervisor
- GS8.** communicate with team members
- GS9.** 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.
- GS10.** suggest improvements(if any)for observed anomalies

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Understand the assigned job in accordance with prior planning</i>	20	40	-	-
PC1. Collect and interpret information from previous day/shift logbook	5	5	-	-
PC2. Interpret the log book to understand the readiness of the crusher/ball mill, screens, grate bars, grizzly, sheave etc.	5	10	-	-
PC3. Plan to execute the assigned job	5	15	-	-
PC4. Seek clarification from supervisor in case of any doubt	5	10	-	-
<i>Carry out the routine inspection of screening and crushing unit</i>	65	165	-	-
PC5. Ensure availability of the checklist for regular inspection	5	5	-	-
PC6. Inspect conveyor galleries for cleanliness	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	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	5	15	-	-
PC9. Inspect gravity take-up pulley wherever required	5	15	-	-
PC10. Inspect crusher teeth, segment, roll. Shaft brush and crusher gap	5	15	-	-
PC11. Inspect ball mill wherever necessary	5	15	-	-
PC12. Inspect grate bars, grills, grizzly rolls, discs, gear trains and oil pumps etc.	5	15	-	-
PC13. Inspect the screens/sheave, vibration motors, V belts etc.	5	10	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. Inspect all relevant equipment as well as safety interlockings, pull chords, heat sensors, speed pick-up relays etc. wherever applicable	5	15	-	-
PC15. Inspect pollution control/dust catching systems for their control level and efficiency	5	10	-	-
PC16. Ensure appropriate display of placards for units under shut-down and maintenance	5	10	-	-
PC17. Escalate deviations or abnormalities to supervisor	5	10	-	-
<i>Understand the importance of proper functioning of the screening and crushing system and continuous monitoring for uninterrupted operation</i>	30	80	-	-
PC18. Ensure working and the standby unit e.g. grizzly's, grills, grate bars, screen, devices of crushers are in proper condition	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	5	10	-	-
PC20. Ensure monitoring of the working unit e.g. grizzly's, screens, grate bars, grizzlys etc. by visual inspection	5	15	-	-
PC21. Ensure continuous monitoring of spillage of raw materials and take appropriate steps as required	5	15	-	-
PC22. Ensure the conveyor belt is properly trained (arresting the shifting of the belt)	5	15	-	-
PC23. Note anomaly if any and inform supervisor, coordinate for taking corrective measures	5	15	-	-
NOS Total	115	285	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ISC/N0105
NOS Name	Carry out inspection and monitor the screening and crushing unit
Sector	Iron and Steel
Sub-Sector	Steel, Sponge Iron, Ferro Alloys, Re-Rollers, Refractory
Occupation	Raw Material Handling
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	25/03/2015
Next Review Date	01/04/2017
NSQC Clearance Date	20/07/2015

Qualification Pack

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

Description

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

Elements and Performance Criteria

Understand the operation of screening and crushing system

To be competent, the user/individual on the job must be able to:

- 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

Plan and coordinate for smooth operation

To be competent, the user/individual on the job must be able to:

- 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

Carry out the operational activities

To be competent, the user/individual on the job must be able to:

- 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 un interrupted operation
- PC15.** Maintain log book and record the spill over job, running condition of the unit and abnormalities if any for next shift

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** Quality and damage checks to be done and importance of the same
- KU2.** Risk and impact of not following defined procedures/work instructions
- KU3.** Escalation matrix for reporting identified issues
- KU4.** Raw material handling system
- KU5.** Various safety interlocking systems that exists in material handling system

Qualification Pack

- KU6.** Importance of size fraction, moisture contents of raw materials for blast furnace operation
- KU7.** Steps to be taken in case of power failure (re-starting the cutter on restoration of power system)
- KU8.** Safety hazards associated with running conveyors, cutters, ball mills, grate bars, grizzly's etc.

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** Construct simple sentences and express ideas clearly through written communication
- GS2.** Fill up appropriate technical forms, process charts, activity logs in required format of the company
- GS3.** read and interpret engineering and machine drawings of screening and crushing system
- GS4.** Read and understand manuals, health and safety instructions, memos, reports, job cards, etc.
- GS5.** Express statements, opinions or information clearly so that others can hear and understand
- GS6.** Respond appropriately to any queries
- GS7.** Communicate with team members and supervisor
- GS8.** 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.
- GS9.** Suggest improvements(if any)for observed anomalies

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Understand the operation of screening and crushing system</i>	20	55	-	-
PC1. Understand the sequence of screening and crushing activities	5	15	-	-
PC2. Interpret the previous shift/day log book to check readiness of the operating stream	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	5	15	-	-
PC4. Seek clarification from supervisor in case of any doubt/deviation	5	10	-	-
<i>Plan and coordinate for smooth operation</i>	5	45	-	-
PC5. Select position of feeder valve as per plan for feeding to blast furnace/wagon loading	5	15	-	-
PC6. Carry out visual inspection of the unit for starting the operation	-	15	-	-
PC7. Coordinate for loco and wagon placement (in case of wagon loading) and repeat the process as necessary during operation	-	15	-	-
<i>Carry out the operational activities</i>	30	95	-	-
PC8. Start crusher from the respective work site control board	-	15	-	-
PC9. Interpret the voice communication clearly for starting the operation process	5	15	-	-
PC10. Ensure starting the raw material handling system	-	15	-	-
PC11. Ensure in case of wagon loading proper signal is being provided	5	15	-	-
PC12. Carry out periodical inspection of running units of screening and crushing system	5	15	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. Record the deviations/faults as detected through visual inspection and inform the supervisor	5	10	-	-
PC14. Coordinate with the concerned team/department for rectification/replacement as necessary to ensure un interrupted operation	5	5	-	-
PC15. Maintain log book and record the spill over job, running condition of the unit and abnormalities if any for next shift	5	5	-	-
NOS Total	55	195	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ISC/N0106
NOS Name	Carry out operation of screening and crushing unit
Sector	Iron and Steel
Sub-Sector	Steel, Sponge Iron, Ferro Alloys, Re-Rollers, Refractory
Occupation	Raw Material Handling
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	25/03/2015
Next Review Date	01/04/2017
NSQC Clearance Date	20/07/2015

Qualification Pack

ISC/N0107: 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.

Elements and Performance Criteria

Plan the routine and preventive maintenance that need to be carried out for screening and crushing system

To be competent, the user/individual on the job must be able to:

- 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

Coordinate to carry out maintenance activities of screening and crushing system

To be competent, the user/individual on the job must be able to:

- 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

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** Quality and damage checks to be done and importance of the same
- KU2.** Risk and impact of not following defined procedures/work instructions
- KU3.** Escalation matrix for reporting identified issues
- KU4.** Knowledge of raw material handling system
- KU5.** Knowledge of various safety interlocking systems that exists in material handling system
- KU6.** Importance of size fraction, moisture contents of raw materials for blast furnace operation
- KU7.** Steps to be taken in case of power failure (re-starting the cutter on restoration of power system)
- KU8.** Safety hazards associated with running conveyors, cutters, ball mills, grate bars, grizzly's etc.

Generic Skills (GS)

Qualification Pack

User/individual on the job needs to know how to:

- GS1.** Construct simple sentences and express ideas clearly through written communication
- GS2.** Fill up appropriate technical forms, process charts, activity logs in required format of the company
- GS3.** Read and interpret engineering and machine drawings with respect to Screening and Crushing System
- GS4.** Read and understand manuals, health and safety instructions, memos, reports, job cards, etc.
- GS5.** Express statements, opinions or information clearly so that others can hear and understand
- GS6.** Respond appropriately to any queries
- GS7.** Communicate with team members and supervisor
- GS8.** 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.
- GS9.** Suggest improvements(if any)for observed anomalies

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Plan the routine and preventive maintenance that need to be carried out for screening and crushing system</i>	20	35	-	-
PC1. Analyse the inspection data /report to identify the sections/parts/equipments pertaining to the screening and crushing system that need rectification/replacement	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	5	10	-	-
PC3. Ensure that all maintenance activities are carried out without/minimum interruption of operation to maintain the planned production schedule	5	10	-	-
PC4. Seek help/clarification from supervisor in case of any doubt	5	5	-	-
<i>Coordinate to carry out maintenance activities of screening and crushing system</i>	20	25	-	-
PC5. Ensure to spare the stream/parts/sections where maintenance activities are to be carried out	5	10	-	-
PC6. Communicate the maintenance team to start the activities	5	5	-	-
PC7. Communicate the co-workers on the stream/parts/sections where the maintenance activities are carried out to prevent any untoward incidents	5	5	-	-
PC8. Record the maintenance data/activities in the log book and inform supervisor on completion of the maintenance job	5	5	-	-
NOS Total	40	60	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	ISC/N0107
NOS Name	Carry out basic maintenance activities of screening and crushing unit
Sector	Iron and Steel
Sub-Sector	Steel
Occupation	Raw Material Handling
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	25/03/2015
Next Review Date	01/04/2017
NSQC Clearance Date	20/07/2015

Qualification Pack

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/ 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 Element/ PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.
7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Minimum Aggregate Passing % at QP Level : 50

(Please note: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ISC/N0008.Use basic health and safety practices at the workplace	45	105	-	-	150	15
ISC/N0009.Work effectively with others	30	70	-	-	100	10
ISC/N0105.Carry out inspection and monitor the screening and crushing unit	115	285	-	-	400	40

Qualification Pack

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ISC/N0106.Carry out operation of screening and crushing unit	55	195	-	-	250	25
ISC/N0107.Carry out basic maintenance activities of screening and crushing unit	40	60	-	-	100	10
Total	285	715	-	-	1000	100

Qualification Pack

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
5S	Technique of maintaining orderliness – Japanese terminology.
CP	Control Plan.
WI	Work Instructions.

Qualification Pack

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a 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 quality of performance required.
Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.

Qualification Pack

Organisational Context	<p>Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.</p>
Technical Knowledge	<p>Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.</p>
Core Skills/ Generic Skills (GS)	<p>Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.</p>
Electives	<p>Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.</p>
Options	<p>Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.</p>